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## I. *Geographical and Statistical Memoir of a Survey of the Neilgherry Mountains, under the Superintendence of Captain* J. Ouchterlony. 1847. [*Communicated by the Chief Secretary to Government.*]

The Neilgherries, properly so called, comprise two distinct tracts of mountainous country, the one called the Neilgherries, or "Neilgherries proper," and the other the "Koondahs." The survey of the latter yet remains to be completed, and hence the statistical data here recorded, relate exclusively to the former region.

Area. The area of the plateau of the Neilgherries, as defined on the north-west, north, east, and south, by the crest of the mass of mountains, and on the south-west by the outline of the "Koondahs," is found by the present survey to comprise 268,494 square acres in its geographical extent: but owing to the ceaseless undulations prevailing over the whole surface, a far greater amount of land is actually available for cultivation.

Of this quantity only 23,772 acres have been brought under cultivation, leaving 244,772 acres either entirely waste, or appropriated for grazing cattle by the various Hill tribes.

Geological structure.

The geological formation of the Neilgherries is of the primitive igneous order; the mass or nucleus of the mountains being granite, frequently passing into sienite.

In every part of the Hills innumerable dykes or channels of basaltic rock, hornblende, quartz, and other minerals commonly found in a similar relation to rocks of the primitive class, intersect the granite, in some instances of considerable magnitude, but more commonly broken into small ramified branches or veins.

In the Koondahs trap rock is more extensively developed, being often found in that part of the district capping the Hills, and spreading out to a considerable extent; but a description of the geology of the Koondahs does not enter into this memoir.

Hornblende rock is also found to occur in some abundance in various parts of the Hills, passing occasionally into hornblende slate, and porphyritic hornblende, having garnets imbedded. This rock is highly ferruginous and decomposes into a stiff red clay which forms extensive beds underlying the soil in many parts of the Hills. It intersects the granite and sienite in deep channels or dykes, which having a greater tendency to decomposition than those rocks, frequently occasion chasms, in which water lodging and wearing away the sides become the cause of the disruption of large masses, which are continually parting from the parent rock, especially after heavy rains.

No stratified rocks make their appearance in any part of this district except at the N. E. angle of the plateau, where, on descending towards the plains, beds of gneiss are met with, but so torn and distorted as to render it almost impossible to derive from their occurrence any geological data of value. The run of the beds however may be pronounced about north and south, the dip being to the east at an angle varying between 30° and 60°. Near the junction with the granite which forms the country in the neighbourhood, the gneiss is much altered, and veins of igneous rock perforate it in all directions.

Gneiss.

I examined this part of the district with much interest, both on account of the highly metalliferous character which this rock usually possesses in other countries, especially as in Saxony its occurrence is marked by the same accompaniments as I have described, and in the faint hope that beds of primary limestone might be found to occur in the vicinity; this mineral, which

Limestone does not occur.

is not found in any part of the mountains, being much needed both for architectural and agricultural purposes.

With the exception of this gneiss formation, the whole of this mountain tract is of primitive igneous structure, granite and sienite alternately appearing as the base of the Hills, while at the same time hornblende rock, basalt, and occasionally greenstone, are found protruding in masses and channels so extensively, as often to give their peculiar character to the rock formation for considerable distances.

Metalliferous deposits.

Ores of copper and lead.

Metalliferous deposits do unquestionably exist in the Neilgherries. Ores of copper (pyrites) and lead (galena) have been found embedded in quartz, but unfortunately not in situ, being merely portions of blocks of stone found in the walls of some "cairns" or ancient places of sepulture, in the neighbourhood of Nunjenaad, not far from the foot of the Koondahs. The circumstance was brought to the notice of Government some time since (I believe by Dr. Burrell and Captain Congreve), when I was directed to co-operate with the latter officer in instituting an inquiry as to the origin of these orey blocks. Captain Congreve however shortly after left the Hills, and though I have taken advantage of every opportunity which offered to pursue the desired object, I am sorry to say my efforts have not been crowned with success, for although many large channels of quartz occur in the neighbourhood of the spot where the blocks were found, and all running in a true metalliferous direction, east and west, I have not been able, though I have traced them a long distance, and crossed their backs in various parts, to detect in any of them a trace of ore, or any of those peculiar indications on the surface, which would elsewhere characterize a vein or lode bearing ores of either copper or lead.

The Todars dwelling near the spot declare their belief that the blocks were brought from the "Koondahs," and although this can be little better than surmise I should certainly say from the aspect of that range of mountains, that deposits of ore are more likely to be found in it than in the Neilgherries. It bears much more the look of a mining country; and the violent igneous action which has evidently prevailed amongst its rocks after their formation, favours the expectation that metalliferous deposits will be found there, if they exist in quantity any where about this mountainous district.

Manganese.

The black oxide of manganese is found about the Hills in many places, existing in small veins and

retiform deposits; but I do not think it could be profitably worked, as the continuance of a supply in a particular spot could not be depended upon, and it could not moreover be brought into any home market, at a sufficiently cheap rate to compete with other ores.

Laterite.

Laterite is also found in various parts of the Neilgherries, generally in an advanced stage of decomposition, forming a lithomargic clay, which underlies the soil of many tracts of land. I observe the existence of laterite most frequently where the sienite contains much hornblende, which favours the belief that it is the result of decomposition of the primitive rock, hastened by the action of the atmosphere upon its excess of ferruginous matter. A bed of this rock occurs near Kaitee sufficiently indurated to be fit for quarrying for building purposes—but no use is made of it by settlers owing to its being more costly than bricks.

Ores of iron.

Ores of iron are met with in many parts of the Neilgherries, occurring in small veins, and disseminated through the mass of the rock enclosing it, but no where (that I have seen) in sufficient quantity to be worth working.

A great many varieties of ores exist, more interesting to the mineralogist than to the statistical recorder.

Hematites.

Hematites, specular iron ore, micaceous iron ore, magnetic iron ore, and iron pyrites, are all found in insignificant specimens.

Pebbles of agate and semi-opal are occasionally to be met with in mountain streams after heavy rain, and would, I doubt not, with corundum, be found more abundant, if persons, who had time to bestow in the pursuit, were to search for them.

There is another mineral which occurs in some abundance on the Neilgherries which might I think—especially in the hands of European settlers—be turned to some economical use.

It is a decomposed feldspar, or "kaolin," of which very tolerable earthenware might be manufactured.

Soil.

The soil of these mountains, speaking of course chiefly of the plateau, is for the most part exceedingly rich and productive, a circumstance for which the observer would not be prepared on witnessing the granitic or sienitic base upon which it rests; since it is usually seen that granitic districts are bleak and barren, owing to the resistance to decomposition offered by the silicious materials of which they consist.

This advantageous contrariety may, perhaps, be accounted for by referring the formation of so much rich soil to the existence of the numerous dykes of rock, whose decomposition is more favourable to its production, especially those of trap and hornblende, the decomposed particles of which, mixing with the quartzose and clayey products of the granite, result in the formation of a soil peculiarly adapted for cultivation.

The great mass of the Hills also has evidently been under grass, and undisturbed by the plough or the mamotie for ages, and as the frosts which occur at the close and beginning of the year in most parts, kill the grass down to the roots, all this decomposed vegetable matter, washed in by the succeeding rains and mixing with the subsoil, continues, and has continued, season after season, to increase its richness, and cause it to penetrate further and further into the poorer subsoil, until the extraordinary depth of rich black mould, which is often observed in the cuttings of a new road, is produced.

The finest patches of land are naturally found on the lower slopes or second steppes, in situations where the conformation of the country has favored the accumulation of soil washed from the hills above, and especially where forests have aided to retain that soil from further denudation by their roots, and have for ages nourished it by their leaves. The chief agricultural tribe on the Hills, the Burghers, seem well aware of this, and the consequence is that in all parts where they cultivate, the face of the country is entirely clear of wood.

Want of Lime.

The chief defect of the soil of this district is the absence of lime, but a very minute quantity of which enters into the composition of the greater part of that under general cultivation at the present time, and as it is too costly an article to be brought up from the plains to be applied as a dressing to the land, considerable deterioration must be going on in its productive capacity. I have remarked that the finest fields are those which are situated near any considerable mass of hornblende rock, and hence it is to be inferred that the superiority of the soil is due to the lime which it receives from its decomposition. Specimens of this hornblende reduced to powder and digested in dilute nitric acid, give a copious precipitate with oxalate of ammonia, showing upon estimate (for I had not the means of collecting and weighing the precipitate), a proportion of at least 8 to 9 per cent. of lime entering into the composition of the rock.

Drained Swamps.

The extensive and numerous swamps which occur on the Neilgherries also, when drained, furnish most valuable soil, either for cultivation *per se*, or for top dressing for poor land. But in this latter form it is never used by the Hill cultivators, who are very backward in the knowledge of the uses and properties of particular manures, as will be treated of under an ensuing head, viz., " Modes of cultivation."

Natural aspect.

The Neilgherry mountains constitute one of those singular features presented in the physical geography of southern India, of comparatively isolated masses upreared amidst the vast plains which extend over the surface of the country, pointing either to foci or points of ancient volcanic eruption by which they have been formed, or to evidences of the wearing agency which has reduced the surrounding tracts to their present remarkably uniform level state; while mountain masses, forming a core of tougher substance, and of material less prone to decomposition, have resisted the corroding action—and have been thus left in the form of isolated and mural precipices, towering above the surrounding country.

The summit or plateau of these mountains presents a most varied and diversified aspect. Although the land extends over its limits in ceaseless undulations, approaching in no instance to the character of a champagne country, and frequently breaking into lofty ridges and abrupt rocky eminences, it may yet, speaking in general terms, be pronounced smooth and practicable to a degree seldom, indeed I believe, in no instance, observed in any of the mountain tracts of equal elevation which occur in the continent of India.

On all sides the descent to the plains is sudden and abrupt, the average fall from the crest to the general level below, being about 6,000 feet on all sides, save the north, where the base of the mountains rests upon the elevated land of Wynaad and Mysore, which standing between 2 and 3,000 feet above the level of the sea form, as it were, a steppe by which the main fall towards the sea is broken. From both of these elevated tracts the Neilgherries are separated by a broad and extensive valley through which the Moyaar river flows after descending from the Hills by a fall at Neddiwuttum in the north-west angle of the plateau; and the isolation of this mountain territory would be complete, but for a singular sharp and precipitous ridge of granite peaks, which projects out from the base of a remarkable cone called

Yellamullay on the western crest of the range, and, taking a west by north course towards the coast, unites itself with the Hills popularly called the "Western ghauts."

The Koondahs.

In the S. W. angle of the Neilgherries, a singular mass of mountains rises, called the Koondahs, which though in point of fact a portion of the great hilly region, are so completely separated from the "Neilgherries proper" that they merit the distinct appellation they have received. Spurs from this secondary range run to the southward to a considerable extent, almost as far as the Ponany river, and it is in the innumerable vallies bounded by these ridges that the magnificent virgin (forest) land is found, of which I made mention in a former memoir, and which as being eminently well suited for the purposes of coffee and other cultivation, will, I feel convinced, shortly be the means of rendering this district one of the most valuable and important under the Presidency.

Remarkable scarcity of forest.

The Neilgherries, or rather the plateau formed by their summits, are by no means densely wooded, the forests occurring in distinct and singularly isolated patches, in hollows, on slopes, and sometimes on the very apex of a lofty hill, becoming luxuriant and extensive only when they approach the crests of the mountains and run along the valleys into the plains below. This absence of forest in a region in which, from its position between the tropics, from the abundance of moisture, and from the great depth and richness of the soil, the utmost luxuriance in this respect would be looked for, is very remarkable; and leads me to conclude that vast tracts of primeval forest land must have been cleared to make room for cultivation at no very distant period.

This belief is strengthened by the fact, that in all parts of the Hills which are exclusively the resort of Todars, such as the elevated land to the north and west of the Pykara river, the whole of the Koondahs, the north-eastern portion of the plateau, called Kodanaad, and other tracts where no cultivation is at present carried on, extensive forests are found. The principal internal range on the Neilgherries is a lofty mass situated in the heart of the district, and running north-west and south-east, the great mountain called "Dodabetta"—the highest on the plateau (being 8,610 feet above the level of the sea,) being the apex, and from it all the minor ridges and spurs which form the undulating land of the Neilgherries may be said to take their rise, with the exception of the "Koondahs" which have a distinct origin, and of a singular elevated

Dodabetta range.

tract forming the north-west portion of the Hills, which is distinctly connected with the Koondahs by a narrow ridge under Makoorty peak. From the Dodabetta range to the eastern foot of the Koondahs the land falls continuously, when these mountains abruptly rising obtain an elevation very little below that of Dodabetta itself.

Atmosphere and climate.

Owing to the great elevation at which the inhabited summit of the Neilgherries stands, and the consequent rarefaction of its atmosphere, aided doubtless, in some degree, by the beneficial influence of the luxuriant vegetation which clothes them, the district, although distant only 11 degrees from the Equator, enjoys a climate now famed for its great salubrity, and remarkable evenness in its seasons, with a temperature which falls in the coldest month of the year to the freezing point and seldom in the hottest reaches 75° in the shade. In stating this I of course refer to the general circumstances of temperature which prevail, for seasons have of course occurred during which from particular atmospheric causes the mercury may have risen occasionally above this estimate.

Coldest months, December and January.

Hottest months, April and May.

The coldest season is during the months of December and January, and the hottest about April and May, though this latter season is not so certain, depending mainly upon the character and time of setting in of the rainy or S. W. monsoon. The hottest period of the day is about 2 o'clock or 2*h.* 40*m.* P. M., and the extreme range of temperature from sunrise to that time averages most commonly 16° throughout the year. The variation is of course the greatest at the time of frost, viz., January and December, when the extreme radiation which goes on during clear nights produces excessive cold towards sunrise, after which the sun's rays, shining with great fierceness through the rarefied atmosphere, speedily restore heat to the earth, and the temperature of the air rises in proportion. Similar causes, reversed in their action, necessarily produce sudden and great cold after sunset, rendering the climate at this season (and indeed at all seasons more or less) one in which the most healthy residents, and especially those who have recently come under its influence, stand in need of caution in their mode of encountering its vicissitudes. For the reasons alluded to, I would venture to remark, that very early and very late parades, according to the practice of the plains, will be found injurious to European troops located on these Hills, and especially to those men whose constitutions have been worn by long residence in a tropical climate.

Ootacamund 7,300 feet above the level of the sea.

The chief station, Ootacamund, from its superior elevation (7,300 feet above the level of the sea) is more exposed to this unfavourable action than the two minor stations, Coonoor and Kotergherry, which are each 6,000 feet above the level of the sea: although these latter are by no means exempt from the same influence, especially during the cold season, as will be seen by the Tables appended to this memoir.

Choice for invalids of three distinct settlements, enjoying each a different climate.

A very great advantage enjoyed by the Neilgherries as a sanitarium exists in the means which are afforded to an invalid to select the peculiar kind of climate which best suits the malady under which he is suffering—by the existence of three settlements, each under Medical charge, situated in different parts of the range, each having a different aspect, and each a climate peculiar to itself: that of Ootacamund being the coldest—but most damp, Kotergherry the next in the scale, and that of Coonoor the warmest. Thus an invalid whose habits or state of constitution render the change, from the torrid heat of the plains to the penetrating cold of Ootacamund, too great and sudden, has the opportunity and option of acclimatizing himself at either of the minor stations, before exposing himself to the vicissitudes of climate which await him on the highest level.

The Valley of Jakatalla well sheltered.

The climate of the Jakatalla valley which I had occasion to recommend to the Most Noble the Marquis of Tweeddale for the site of the projected barracks for a European Regiment of Infantry, and which has, I believe, been approved of by Government, will I think be found a happy medium between those of the chief and lesser stations. It is well sheltered from the dry cutting northerly winds, which cause so much sickness in Ootacamund during the months of March and April, by the high Dodabetta range which bounds the valley to the northward; and the rains of the S. W. monsoon, though they of course visit this part of the Hills, are by no means so incessant, or accompanied by so much driving mist as is experienced during the same season at Ootacamund. This monsoon (the S. W.) sets in on the Hills during the month of June and is ushered in on the Western side, including Ootacamund, by heavy rain and violent gales of wind. The station of Coonoor gets the monsoon at the same time but with less rigour, owing to the clouds which come charged with rain from the westward being attracted to the earth, and induced to

Enjoys a very even and temperate climate.

discharge their contents by the opposition offered to their flight by the high spurs which run out from the Dodabetta range and interpose between the west and Coonoor.

Kotergherry sheltered and healthy.

The Kotergherry station is also very favourably protected from the violence of the S. W. monsoon by the Dodabetta range itself, which stands out like a huge wall to screen it. The average fall of rain, the chief part of which occurs on the Hills during this monsoon cannot be called excessive, especially when compared with the visitations in this respect experienced in the neighbouring province of Malabar.

The constant shifting of abode from spot to spot, which the duty of conducting a survey necessarily entails, has prevented me from keeping a register of the actual amount which has fallen in every month of the year, except in 1847, but from such observations as have been made when opportunity offered, I am led to believe that about 60 inches is a fair quantity to assign as the average fall of rain throughout one year at Ootacamund, 50 inches at Kotergherry, and 55 inches at Coonoor. The N. E. monsoon sets in generally in the beginning of October, and is often accompanied by rain more or less all over the Hills, but especially on the east side and at Kotergherry, which, from its position, is exposed directly to its force. The month of December is generally very stormy, and often fatal to a large extent to the lives of the Hill cattle, and to the bullocks and other beasts of burthen employed to bring produce from the plains. The cold easterly wind, blowing through the light rain which is continually falling, and striking upon the wetted skins of the animals, produces a degree of intense cold which soon destroys them, and by these means serious inroads are yearly made upon the herds of the Hill inhabitants, by whom their loss is not readily replaced. Annexed to this memoir are various Tables extracted from the Meteorological Register kept in the Survey Office at Ootacamund and Kotergherry, which will show all particulars regarding the changes of temperature, the fluctuations and oscillations of the mercury in the barometer, as shown at the hours of maximum and minimum pressure, (9*h.* 50*m.* A. M. and 4 P. M.) temperature of wet bulb, direction of the wind, aspect of the sky, &c.

Hurricanes very rare on the Neilgherries.

The Neilgherries are occasionally, but by no means frequently, visited by violent storms or hurricanes—so rarely indeed as to excite surprise and speculation

as to the cause of this exemption, when its isolated and exposed situation in the Peninsula is considered. Upon this and other points of interest connected with the meteorology of these Hills much light will doubtless be thrown by the observations now regularly conducted in an observatory recently erected on Dodabetta under the auspices of Mr. Taylor, the Honorable Company's Astronomer at Madras, in which an instrument for measuring the force of the wind, and other valuable adjuncts to a meteorological Observatory have been placed.

During the prevalence of the S. W. monsoon the atmosphere is almost continuously charged, more or less, with dense mist, enveloping chiefly the mountain tops, but descending into the inhabited vallies as the warmth of the day passes, and spreading in heavy and impalpable fog in all directions. When not under this influence the atmosphere overhanging these mountains is brilliantly clear and cloudless—and especially so on the eastern side of the range.

## TABLE

*Showing the average temperature, &c., throughout the year, on the Neilgherry Hills.*

| | Month. | Mean Temperature. | | | * Mean range of the Thermometer. | | Remarks. |
|---|---|---|---|---|---|---|---|
| | | At Sunrise. | At 2*h.* 40*m.* P. M. | At Sunset. | Sunrise to Sunset. | Rain in Inches. | |
| | | ° | ° | ° | ° | " | |
| At OOTACAMUND, 7,300 Feet above the level of the Sea. | January.. | 42 | 63 | 58 | 21 | 1 | Cold North-Easterly winds prevail. |
| | February.. | 44 | 65 | 60 | 21 | 1 | Do. do. do. |
| | March.... | 49 | 68 | 63 | 19 | 2 | Do. and dry do. do. |
| | April..... | 54 | 68 | 63 | 14 | 5 | And dry do. do. |
| | May ...... | 54 | 68 | 63 | 14 | 6 | Commences to vary to S. W. |
| | June...... | 53 | 64 | 59 | 10 | 8 | S.W. Monsoon sets in: strong wind. |
| | July...... | 52 | 62 | 57 | 10 | 7 | S.W. and W. winds blow. |
| | August.... | 52 | 62 | 57 | 10 | 6 | Wind begins to vary to W. & N. W. |
| | September | 52 | 62 | 56 | 10 | 7 | Wind N.W. and towards end N. E. |
| | October... | 51 | 62 | 56 | 10 | 9 | N. E. and Easterly winds prevail. |
| | November. | 49 | 61 | 55 | 12 | 5 | N. E. winds blow, fresh, clear. |
| | December. | 45 | 60 | 55 | 15 | 3 | Do. do. often violently. |
| | | | | | Total. | 60 | Inches of rain. |

* From want of a maximum and minimum Thermometer, I have not been able to record the *extreme* range of the Thermometer during the 24 hours.

| | Month. | Mean Temperature. | | | Mean range of the Thermometer. | | Remarks. |
|---|---|---|---|---|---|---|---|
| | | At Sunrise. | At 2h. 40m. P. M. | At Sunset. | Sunrise to Sunset. | Rain in Inches. | |
| At KOTERGHERRY, 6,100 Feet above the level of the Sea. | January .. | 51·5 | 66 | 60 | 15 | 2 | N. E. and N. W. winds prevail. |
| | February.. | 52·5 | 67 | 63 | 15 | 3 | Do. do. rain very uncertain. |
| | March.... | 54 | 67 | 63 | 13 | 6 | Winds variable N. E. to S. E. |
| | April..... | 56 | 68 | 64 | 12 | 10 | Do. do. N. E. to E. & S. E. rain uncertain. |
| | May ...... | 56·5 | 68 | 64 | 12 | 2 | Do. from N. E. to N. W. & West. |
| | June...... | 58 | 69 | 65 | 11 | 2 | Do. from N. W. to S. W. rain var. |
| | July....... | 60 | 70 | 65 | 10 | 4 | S. W. monsoon winds, but light & var. |
| | August.... | 60 | 71 | 65 | 11 | 2 | N. W. winds prevail in this month. |
| | September. | 59 | 69 | 64 | 10 | 2 | Do. do. veering to W. |
| | October... | 56 | 68 | 63·5 | 12 | 10 | Do. do. light and variable. |
| | November. | 54 | 67 | 61 | 13 | 2 | N. E. winds veering to N. W. |
| | December. | 52 | 66 | 60 | 14 | 5 | Winds generally from the N. gusty. |
| | | | | | Total. | 50 | Inches of rain. |

Productions.

The resources of this highly favoured region are as diversified and valuable, as they appear easy of attainment, and comparatively inexhaustible. With a climate and soil such as have been described, great productive powers in the vegetable kingdom, and a proportionately high development of them, would naturally be looked for. That the latter is wanting to a lamentable degree is to be accounted for, by the wretched system of husbandry pursued by the agricultural tribes who have settled upon the Neilgherries, as also possibly, in some degree, by the absence of that encouragement which would be produced by the institution of some channel, through which the products of their industry might reach a ready, certain, and ever demanding market.

Wheat.

I commence the long list of productions, which the Neilgherries are capable of supplying, with wheat, as one of the most important, and as one, moreover, which the Honorable Court of Directors appear at the present time to be much interested in collecting data regarding, from all districts in India capable of producing it.

In making up the returns of the gross quantities of grains of all

sorts produced in the district, I have taken the totals of each from the Seebundy accounts of 1847 or fusly 1257, as rendered orally in the cutcherry. From these it appears that in 1847, 70 "vullums" of land were cultivated for wheat, each vullum producing on the average 400 "kolagums." This "kolagum" which is a measure peculiar to the Hill tribes, contains 226 cubic inches, and hence the quantity produced was

3,000 bushels
or 375 quarters

the weight of a kolagum of average wheat (husked) is I find 7lbs. hence the *bushel* of Neilgherry wheat weighs....$68\frac{3}{5}$ lbs. avoirdupois
or a quarter.......$548\frac{4}{5}$ ,, ,,

A "vullum" of land is equivalent to 2 cawnies, 21 grounds, and 864 square feet. Hence the total quantity of land cultivated for wheat at the present time is, 202 cawnies, or 267 acres: and the produce is $14\frac{7}{10}$ bushels per cawny, or $11\frac{1}{8}$ bushels per acre. The return in moderately good land cultivated for wheat is 40 to 1; or 40 bushels reaped for 1 bushel sown.

That the quantity of wheat at present produced on the Neilgherries could be very greatly increased there cannot be a doubt, provided a better system of husbandry were introduced, and better seed imported from Europe and distributed amongst the agricultural tribes; and as recent distressing circumstances in Great Britain appear to have directed the attention of the Home Government to colonies, which are thought capable of producing this grain in sufficient quantity to assist in relieving the mother country from her present hazardous position of dependence upon foreign states for her supply, I shall venture to offer a few further remarks, before closing my notice of this important item in the chapter of natural productions.

Neilgherries and Koondahs well suited for the growth of wheat.

The whole of this Hill district, including the Koondah mountains, is eminently well suited in point both of soil and climate, for the production of wheat, but as the last mentioned tract is not yet surveyed, it must at present be lost sight of, although I feel confident it will be found on examination to furnish a very important addition to the gross amount of land estimated as suitable for the cultivation treated of, and which at present lies totally waste and useless.

The quantity of land thus lost to the state I calculate to amount to no less than 200,000 acres, as is shown by the following statement :—

| | | |
|---|---|---|
| | | (Square acres.) |
| Total content of the geographical surface of the Neilgherries.................................. | | 268,494 |
| Of this quantity there are now under cultivation including lands lying fallow.......Sq. Acres | 31,434 | |
| Pasturage to be reserved for the cattle of the Todars at the exaggerated rate of 200 acres per 100 head (less than 40 per 100 being allowed by the revenue authorities in the calculation for assessment), for an average of 2,000 head of buffaloes will be....... | ,, 4,000 | |
| Pasturage to be reserved for the cattle of the Burghers, consisting of buffaloes and bullocks, averaging 8,000 head at 100 acres per 100 head.......................... | ,, 8,000 | |
| Land occupied by the cantonment of Ootacamund, future barracks, roads, &c...... | ,, 6,000 | |
| Village sites, sacred groves, &c........... | ,, 2,060 | |
| 200,000 Acres of land lying waste on the Neilgherries exclusive of the Koondahs. | | |
| Tracts of rocky ground, morasses, and other land not immediately fit for cultivation (although these might well be considered as compensated by the gain of surface introduced through the undulations of the land)................................ | ,, 17,000 | |
| | | Deduct..68,494 |
| | and there is a remainder of | ..200,000 |

acres entirely unoccupied and waste, being either covered with forest, or lying under grass not required for pasturage.

Under a better system of cultivation also it would not be necessary to suffer so large a proportion of the Burghers' cultivated land to lie fallow at one time, as is at present in that condition, amounting, in round numbers, to 17,000 acres out of a total of 31,500 acres of cleared and arable land.

Of the forest land every acre is of course peculiarly well suited for wheat, and being virgin soil it should produce, under proper management, large crops of the very finest grain.

The same may be said of swamps, when drained, but as potatoes are found to thrive well in the soil which their drainage produces, such land in a farm would naturally be reserved for stock produce, and an allowance has therefore been made for this in the estimate.

Making, however, exaggerated deductions on all accounts, there yet remain no less than 200,000 acres of unallotted and unemployed land, of which at the very lowest estimate one half, or 100,000 acres, may be taken as fit for the production of wheat, under a proper system of husbandry, allowing a sufficiency of well prepared manure, an occasional dressing of lime, and exercising proper judgment in allowing it to lie fallow or changing crops, according to its condition and composition of soil.

It has been already stated that the Burghers obtain from their wheat lands a quantity of grain equivalent to 11⅕ bushels per acre, but as the depth to which they plough their fields never exceeds 7 inches, and for the most part is barely 6, and as they give them only the most meagre allowance of sun-dried and exhausted manure, never exceeding (as far as I have been able to ascertain by counting the baskets brought and measuring spaces of land dressed with it) half a ton per acre, and this not ploughed well into the ground, but merely scraped into the surface furrows, and as they never supply the land with what, from the composition of the soil, it so much needs, viz. lime, it may be safely assumed that under a proper system of tillage this amount of produce could be at least trebled, or, at a very low estimate, 4 quarters of wheat could be obtained from one acre.

I may therefore safely affirm that this district is capable of furnishing, for export to Europe, from 4 to 500,000 quarters of wheat of a quality far superior to that which is at present raised, and at a cost sufficiently low (the distance to the nearest shipping port being only 110 miles, 36 miles of which are performed by water) to admit of large profits being realized by the growers, even when the price in England is so low as 65 shillings a quarter.

The following is an estimate of the cost *to the Burghers* of the cultivation of wheat per English acre, ascertained with as much exactness as circumstances and the deceitful character of the people,

who seldom adhere to the truth in any of their statements, have admitted of:

### Estimate.

*Estimate of the expense of cultivation of wheat to the Burghers.*

| | | | | |
|---|---|---|---|---|
| Ploughing: 5 ploughs with 2 bullocks and 1 driver, in 3 days plough 1 vullum of land ($=3\frac{4}{5}$ acres). The keep of the bullocks costs nothing, as they get nothing but grazing: the expense is therefore the hire of 15 men per vullum or 4 per acre at 2 annas.... | Rs. | 0 | 8 | 0 |
| Collecting weeds and grass and burning them, 2 boys at 1 anna.... | ,, | 0 | 2 | 0 |
| Bringing and spreading 5 baskets of manure, 1 man at 2 annas.... | ,, | 0 | 2 | 0 |
| Sowing seed and turning the soil 5 ploughs to one vullum or 6 men, which is $1\frac{1}{2}$ men per acre at 2 annas. | ,, | 0 | 3 | 0 |
| Seed wheat $2\frac{2}{3}$ kolagums at 2 annas and 8 pice per kolagum.... | ,, | 0 | 7 | 0 |
| Repairing fences and clearing channels to carry off rain, 1 man.... | ,, | 0 | 2 | 0 |
| Reaping and thrashing: the expense of the first is covered by the straw, and the last costs nothing, as it is performed by the bullocks which are driven round and round a post to tread out the grain. | | | | |
| Assessment, at the highest rate.... | ,, | 0 | 14 | 9 |
| Cost per acre.. | Rs. | 3 | 0 | 9 |

### Return.

| | | | | |
|---|---|---|---|---|
| 105 kolagums of grain which are sold at 2 annas 8 pice.... | Rs. | 17 | 8 | 0 |
| Deduct cost of cultivation...... | ,, | 3 | 0 | 0 |
| Profit to the cultivator *per acre*... | Rs. | 14 | 8 | 0 |

It is true that out of this we must take the "goodoo" or tribute which they give to the Todars, and which may be considered in the light of rent for the land; but this is not much; they profess to give $\frac{1}{6}$th, but I have reason to believe, both from the statements of the

Todars and of the Burghers themselves, that what they actually make over as "goodoo" is not above one-half of this proportion, if even so much, especially in the item of wheat which is so profitable to them.

It may not be considered out of place to introduce here a statement of the expense of keeping horses and cattle, and of carrying on farming operations generally on the Neilgherries.

Plough horses. Horses cast from the Artillery and Cavalry would, when castrated, answer very well for the plough: they may be purchased at from 100 to 200 rupees.

| | |
|---|---|
| 2 horses would require 1 horsekeeper at Rs. 7 per mensem..Rs. | 7 |
| and (until the farm yielded hay) | |
| 2 grass-cutters.................... „ 4 „ „ | 8 |
| Food: gram 2 seers per day for each horse 4×30=120 seers „ | 7 |
| barley 2 „ „ „ 4×30=120 „ „ | 4 |
| Shoeing, 1 rupee each per mensem ........................ „ | 2 |
| Halters, cumblies, salt, medicines, &c., 1 R. per mensem.... „ | 2 |
| Total per mensem..Rs. | 30 |

which is £18 per annum per horse.

Spade husbandry. A cooly can dig in one working day in new meadow ground about 25 to 30 square yards, one foot deep, his pay being 2 annas.

Children employed to weed, receive 1 anna per day.

Native farm servants, gardeners, &c., receive 5 Rs. a month.

Herdsmen for cows, goats, &c. „ 4 „ „

Keepers for bullocks, employed to bring supplies or carry produce to the coast or to market, receive 5 Rs. a month, at the rate of 1 keeper to every five head of cattle.

A good carpenter receives ½ rupee a day.

A good bricklayer „ ½ „ „

Lime. Lime, in an unslaked caustic state, can be delivered on a farm on an average of distance from the high roads at the rate of 12 annas per bullock load of about 2 bushels.

Bones. Bones could be obtained from the low country for the cost of collecting in the villages and conveying up the passes.

Barley. Next in importance in the class of productions is barley, the quantity of which, raised during the past year far surpasses that of wheat. In 1847 it amounted to 1,419 vullums, each vullum producing on an average 400 kolagums, making a total of

60,383 bushels,
or 7,548 quarters,

taking the imperial bushel as before at 2,218 cubic inches, and the kolagum, by my measurement, at 226 cubic inches. The barley grown on the Neilgherries is divided into two kinds by the Burghers, the first and best being "Sheemey ganjee" or English barley, so called from its being the degenerate produce of English seed given to the head Burghers many years ago, by, I believe, Mr. Sullivan, when Collector of this district, and the other "Malley ganjee" or Hill barley, which they describe as indigenous to the Hills. The quality of both sorts is very poor, nor is this much to be wondered at when their defective mode of cultivation is witnessed, and the great deterioration of the grain, which naturally results from the constant employment of the same seed in the same land over and over again, without any change or any attempt at the introduction of imported or mixed seed. The weight of a kolagum of ordinary barley is $5\frac{1}{2}$ lbs. which gives 54 lbs. for the weight of a *bushel*, and 432 lbs. for that of a *quarter*. The return in moderately good ground is 50 per cent. under that of wheat, being only 20 measures of crop for 1 measure of seed.

The yield per cawny is 14·7 bushels,
or per acre 11·12 do.

and the total amount of barley cultivation is

in cawnies 4,109
or in acres 5,433

Beer. Before quitting the subject of barley I cannot refrain from adverting to one immediately connected with it, and which I deem of so much importance, that although I am not sanguine in my hopes that Government may be induced by any representation made by me to institute experimental proceedings, with a view to test the feasibility of the scheme, I still consider it my duty to place on record in this memoir the results of experiments which I have had favorable opportunities of making, under the impression that a time must sooner or later come when this,

amongst many other valuable resources of these Hills, will be fully developed and taken advantage of.

I allude to the subject of fermented malt liquors which can be made on the Neilgherries with the greatest facility in all the details of the process, and at a cost so trifling as to enable the commissariat to supply the European troops at the three stations more immediately in the vicinity of the Hills, viz., Bangalore, Trichinopoly and Cannanore, with both ale and porter, at a rate, calculated on an extreme estimate, not exceeding 10 annas per imperial gallon delivered to the men from the cask in the canteen, or $2\frac{1}{2}$ annas per quart, equivalent to $3\frac{1}{2}d.$ per pot.

Can be made and sold at Bangalore at $2\frac{1}{2}$ annas per quart.

Independent of the importance, both in a moral and economic point of view, of supplying to the troops a liquor which, from its goodness and cheapness, will induce the majority to prefer it to ardent spirits, the subject becomes still more entitled to consideration from the advantages which must result from its successful issue, when the projected measure for the permanent location of a regiment of European troops on the Neilgherries shall be carried out: for as the chief item in the estimate of cost is the carriage from the brewery to the station in the plains, beer will be supplied to those resident on the spot at a greatly diminished rate.

A very favorable opportunity will also be offered for bringing the project into practical operation when a regiment is stationed on the Hills, because amongst the men many brewers and maltsters by trade will no doubt be found, and by the practical knowledge of these men many difficulties in the details of the process which experimentalists like myself encounter, will be speedily overcome. An inspection of the Tables of temperature given in the appendix to this memoir will at once show that the first part of the process of the manufacture of beer, viz., the conversion of barley into malt, can be carried on here as well as in any part of Great Britain; for although the range of the mercury may appear so great as to endanger the success of the process by causing the germination to proceed too rapidly, this evil can be readily averted by placing the malting floors in buildings with thick stone or even mud walls, covered with thatched roofs elevated considerably so as to deflect the rays of the sun and preserve an even and low temperature throughout the day. The temperature found most suitable to malting in England

Malt.

Temperature well suited for malting and fermenting. Average temperature of the Neilgherries 62°.

is about 60° to 62°, and this degree of heat could be maintained without excess in malting sheds on these Hills throughout at least 9 months in the year.

Quality of barley very inferior.

I must observe however that the barley grown here is so poor in quality, so light in the grain, and containing in a given measure so large a proportion of husk in excess of what the same quantity of English barley would produce, that the malt made from it yields in the mash but a very disproportionate quantity of saccharine matter, rendering it necessary to employ raw sugar as an adjunct to produce a wort of sufficient strength. But this, which might elsewhere be considered an objection on the score of expense, is here of easy remedy, since in the immediate vicinity of the Neilgherries, viz., in Mysore, excellent sugar is manufactured in great abundance, and at a rate so low that at this present time, February, 1848, it is being sold in the bazaar of Ootacamund at 3 Rs. 12 annas per maund of 25 lbs. weight, being equivalent to 33*s.* per cwt. Formerly, a prejudice existed against the employment of sugar in the manufacture of beer, but as it is now seen that the permission to introduce it into breweries in England which has been recently granted by the legislature is regarded by the public as a signal boon, it must be self evident that since this important article is, comparatively speaking, indigenous to the spot, cheap, excellent and abundant, and as the climate is in all respects eminently well adapted for carrying on the process of vinous fermentation as well as that of malting, beer and porter can, under proper management, be produced on the Neilgherries in every respect as wholesome and good as that now imported from England, and at a cost less by one-half, even including cartage to the station where it is to be consumed.

Sugar cheap and good.

I beg leave to observe that in advancing these remarks, I do not base my expectations and assurances on mere surmise or theoretical views of the subject, but upon the results of actual experience, as I have now brewed several casks of beer without a single failure in the principal parts of the process, viz., malting, fermentation, and fining, while its quality has been much approved of by many persons who have tasted it, amongst whom I may enumerate, Mr. Drury, the senior member of the Board of Revenue; Captain Bell, Secretary to the Board; Major General Kennett, Lord Gifford, General Gibson, with many others. In consequence of the success which attended my ear-

Good beer has been brewed on the Hills by the writer of this memoir.

ly experiments, in conducting which I employed Malt prepared by myself from Hill barley, with hops and dried yeast imported from England, and my confidence in the success of the scheme if entered into by Government, I addressed a letter to the Commissary General upon the subject, communicating such details as seemed of interest, and offering to carry on further trials on a small scale, at my own expense, if a copper could be supplied to me temporarily on Indent from the commissariat stores. I also sent samples of some beer which I had brewed, but which had an unpleasant taste communicated to it owing to my having employed "gour" or "raw jaggery" in the brewing in place of refined sugar, without taking the precaution of cleansing it from the dirt and gummy matter with which this article is generally contaminated. I was not so fortunate as to receive a reply to this letter (beyond a message through a third party) and this absence of encouragement prevented me from following the matter further, but I may add that for my own use I continued the manufacture with a success, which convinces me that it is only necessary to extend the scale upon which my operations are carried, and to secure practical knowledge in the more important details of the process, to ensure the most complete realization of my anticipations regarding the vast benefits to be derived by this item in the list of productive resources of the Neilgherries.

Samples sent to the Commissary General.

No answer received.

The following is an estimate of the cost of ale brewed here, from *actual* experiment. In England to make a hogshead (66 gallons) of strong ale intended for export to the tropics, the brewers use

6 bushels of malt,
and 6 lbs. of hops:

now it has been ascertained since the introduction of sugar into British breweries that

180 lbs. of moist sugar are equivalent to
1 quarter, or 8 bushels of malt.

Estimate of the expense of manufacturing malt liquors.

If therefore both malt and sugar are employed in equal proportions, the hogshead will require 3 bushels of malt and 72 lbs. of sugar. Considering the Hill malt to be 100 per cent. inferior to English malt, I made use of

6 bushels of malt and 72 lbs. of sugar.

ESTIMATE.

| | | | | |
|---|---|---|---|---|
| 6 bushels of barley, or 60 kolagums at 12 kolagums per rupee, | Rs. | 5 | 0 | 0 |
| 72 lbs. (3 maunds) of sugar, at 4 rupees per maund, | ,, | 12 | 0 | 0 |
| 7 lbs. of hops, imported from England, | ,, | 7 | 0 | 0 |
| Fuel for kiln drying malt, and boiling, | ,, | 1 | 4 | 0 |
| Proportion of labour in steeping barley, turning malt, drawing water, brewing, &c | ,, | 2 | 0 | 0 |
| Sundries, | ,, | 1 | 4 | 0 |
| Cartage to Bangalore (1 cask a load,) | ,, | 9 | 0 | 0 |
| Total Rupees | | 37 | 8 | 0 |

A hogshead should run 60 gallons of clear beer, hence Rs. $\frac{37,,8}{60}$ = 10 annas per imperial gallon for the gross cost.

This estimate might be reduced in many of its items if a Government brewery were established here upon an extended scale. In the first place all the yeast produced would meet with a ready sale in Ootacamund, for the bakeries which are now dependent on the low country for a supply of toddy, with which bread is fermented all over India, and which, having to travel a considerable distance before it reaches the settlement, is often found to have passed into the stage of acetous fermentation, rendering it either unfit to make bread with, or causing the bread to have an unwholesome and bad taste. A large quantity of yeast would also be daily required for the bake-houses of the European regiment located here. The estimate for hops, at 1 Rupee per pound delivered here, is far too high, as, if sent out by the Home Government in quantity, they could not possibly stand in at the brewery at so high a rate; and the cost of labour would be diminished if a large quantity of beer were brewed daily.

Yeast much wanted on the Hills for making bread.

I would further beg leave to dwell upon the importance to this district of the establishment of such a manufacture upon a large scale in a Revenue point of view, which from the great demand it would create for barley, would soon lead to the reclamation of the greater part of the waste but rich lands, which are now left untouched through want of stimulus to the industry of the Hill

The Revenue improved by the increased demand for barley for malting.

tribes, and also, as it appears to me, in some measure to the want of hands to till them—a deficiency which would however be speedily remedied by immigration from Mysore and the plains around. In fact were it not for the assumption of absolute right over all the lands, waste and cultivated, which are situated on the plateau of these Hills, by the Todars, Burghers, and Kothers, there is no doubt that many low country people, who came up here seeking employment as Coolies, would form settlements and permanently locate themselves wherever they could obtain possession of land to bring under cultivation. Should Government at any future time see fit to create an establishment on these Hills for the manufacture of beer, it would be very advisable, and indeed in the first instance almost indispensable, to connect with it a Government farm, to serve as a model for the introduction of improvements in husbandry, both in regard to ploughing and dressing the land, and in the preparation of good manure, a department of the farmer's profession of which the Hill agriculturists appear to have no knowledge whatever. Good seed must be sent from England and distributed amongst the Burghers, upon whose exertions the stimulus of a premium, in the shape of a higher price for barley of a superior description, would doubtless soon produce a beneficial effect, while imitation of the system pursued by the employés of Government in the management of the farm lands would also, it is supposed, lead to the adoption of more civilized notions and practice of agriculture than are now to be found prevailing in any part of this rich, but ill appreciated, Hill tract. In this climate Europeans might with perfect safety as regards their health, go through all the out of doors labour which falls to the lot of farming men in England. They do so in New Zealand and Port Adelaide where the climate is unquestionably less temperate than here, and as on the Neilgherries the actual exertion of European bodily strength would only be required at particular seasons of the farming year, such as in the direction of the plough and the use of the scythe, while superintendence and instruction of the Native labourers would alone be required, on the part of a European, in conducting the minor details of a farm, I cannot but think that in many respects a far finer field is offered on these Hills to the emigrant farmer from home, than is met with by the many who flock to the Australian settlements.

Advisability of establishing a Government farm, for the purpose of promoting and improving the cultivation of wheat and barley.

Europeans can labour in the day time on the Neilgherries.

Labour cheap—2 Annas per day.

Here cooly labour is very cheap, 2 annas or $2\frac{3}{4}d.$ a day being the regular rate of pay for a working man who can perform any duty pertaining to spade husbandry, and undertake all the duties of a farm, which, in England, fall to the lot of the common labourer, such as hedging and ditching, trenching, hoeing, reaping, stacking, thatching, &c. &c. A shilling a day, or $\frac{1}{2}$ a rupee, is the pay of a bricklayer or carpenter; men to look after 2 horses receive 14 shillings, or 7 rupees a month, cowherds 4 or 5 shillings, and all other labour in proportion. These advantages, coupled with those presented by a ready and ever demanding market for such articles of produce as wheat, barley, (oats if raised) clover, hay (of which article an immense quantity would be consumed in Ootacamund if it was procurable), turnips, potatoes (Ceylon offering a very favourable market for this vegetable), butter, eggs and stock of all descriptions, both for butcher's meat and for salting for ship use, would surely, it is to be supposed, tempt many indigent farmers to this hilly region, whose necessities impel them to emigrate from the mother country, but whose steps are stayed by the warnings uttered by the many hundreds of their unfortunate fellow countrymen, who have hurried heedlessly out to the Australian colonies, only to meet with disappointment and ruin.

Site recommended for a Government Farm.

Should circumstances ever induce Government to establish a Farm on these Hills for the purpose of encouraging the growth and extending the cultivation of wheat and barley, I should recommend two sites for its location; one on the elevated tract of land to the westward of the Pykara river, commencing at the north-west angle of the plateau near Neddiwuttum, and extending southward to "Makoorty peak," the whole of which may be said to be uninhabited, there being only 7 small Todar munds situated in it, and these not all occupied, while the soil is for the most part excellent, pasturage abundant, and the land covered, in many parts, with fine forest, rendering the tract (which contains about 12,000 acres) admirably adapted for the purpose which I venture to suggest.

Kodenaad.

The other site is a fine tract of land forming a sort of promontory in the north-east angle of the plateau of the Hills called "Kodenaad" which is equally uninhabited, having only 3 occupied Todar munds within its limits; the

soil good and forest abundant, many fine wooded vallies extending through it, and offering a most eligible locality for a farm. The tract contains about 7,000 acres.

Other dry grains produced.

The other grain productions of the Neilgherries are ragghee, samee, korallie, tenney, buttacudaley (a kind of peas), shanungee (a kind of gram), garlic, onions, kudagoo (mustard seed), vendium, opium and potatoes. Almost all the grains enumerated are raised solely for home consumption—and, excepting korallie, for which about 1,200 vellums of land are cultivated yearly, the quantity of each which is produced is insignificant.

I may therefore refer for further particulars regarding them to the accompanying "Statement" in which is set forth the total quantities of land cultivated and of grains produced, the ratio of return of crop to the seed sown, the selling prices of each and the rates of assessment. The information upon which the table has been formed is derived from the revenue accounts for 1847, and although the average of produce and return is rather a high than a low one, it may, I think, generally speaking, be pronounced as correct as it is possible to make a return of its description, in a district where the site of cultivation is so perpetually shifting as is the case on the Neilgherry Hills. From the data given in the statement it will be apparent that, where the cost of labour is so low as it is here, considerable profits must be realized by the cultivators.

In the items of potatoes, wheat, poppy and barley we find that after deducting the assessment and the cost of seed there remains respectively as profit, and for repayment of the expense of cultivation:

Profit per acre to the growers on Potatoes, Wheat, Poppy, Barley.

| | | | | |
|---|---|---|---|---|
| On one acre of Potato land.... | Rs. | 54 | 3 | 3 |
| ,, ,, ,, ,, Wheat ,, .... | ,, | 16 | 0 | 0 |
| ,, ,, ,, ,, Poppy ,, .... | ,, | 8 | 10 | 0 |
| ,, ,, ,, ,, Barley ,, .... | ,, | 5 | 13 | 7 |

These are estimated upon the prices obtainable on the Hills for produce, but if potatoes and wheat were exported a much larger profit would be realized. Hence another promising opening to emigrants in the form of an establishment for breeding and salting pork for ship use; as, since potatoes and barley can be produced at so low a rate, and a herd of

Salting pork, &c.

*STATEMENT of the AGRICULTURAL PRODUCTS of the NEILGHERRIES in* 1847—*Fusly* 1256.

| Name of Production. | Quantity of land cultivated. In Vullums. | Equivalent In Cawnies. | Equivalent In Acres. | Produce. In Kolagums per vullum. | Produce. Equivalent in bushels per acre. | Ratio of return of crop from seed. | Gross amount produced. In Kolagums. | Equivalent In bushels. | Equivalent In quarters. | Average selling price. Per Kolagum of 2 seers. R. A. P. | Equivalent Per bushel. R. A. P. | Equivalent Per quarter. R. A. P. | Rate of Assessment. For good land. Per Vullum. R. A. P. | Good land Equivalent Per Cawny. R. A. P. | Good land Equivalent Per Acre. R. A. P. | For inferior land. Per Vullum. R. A. P. | Inferior land Equivalent Per Cawny. R. A. P. | Inferior land Equivalent Per Acre. R. A. P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat........ | 70 | 202 | 267 | 400 | 11·12 | 40 to 1 | 28,000 | 2,978 | 372 | 0 2 8 | 1 9 0 | 12 8 0 | 3 8 5 | 1 3 6 | 0 14 9 | 2 5 7 | 0 12 9 | 0 9 10 |
| Barley........ | 1419 | 4109 | 5433 | 400 | 11·12 | 20 ,, 1 | 567,600 | 60,383 | 7548 | 0 1 1 | 0 10 2 | 5 1 4 | 3 8 5 | 1 3 6 | 0 14 9 | 2 5 7 | 0 12 9 | 0 9 10 |
| Raggee....... | 105 | 303 | 400 | 400 | 11·12 | 80 ,, 1 | 42,000 | 4,468 | 558 | not brought to market. | | | 2 0 11 | 0 11 5 | 0 8 8 | 0 14 1 | 0 4 10 | 0 3 8 |
| Samee........ | 364 | 1052 | 1391 | 300 | 8·4 | 60 ,, 1 | 109,200 | 11,617 | 1452 | 0 0 0 | 0 0 0 | 0 0 0 | 2 0 11 | 0 11 5 | 0 8 8 | 0 14 1 | 0 4 10 | 0 3 8 |
| Koralley...... | 1289 | 3724 | 4924 | 200 | 5·6 | 10 ,, 1 | 257,800 | 27,425 | 3425 | 0 0 0 | 0 0 0 | 0 0 0 | 2 0 11 | 0 11 5 | 0 8 8 | 0 14 1 | 0 4 10 | 0 3 8 |
| Tenney....... | 102 | 294 | 385 | 300 | 8·4 | 30 ,, 1 | 30,600 | 3,255 | 407 | 0 0 0 | 0 0 0 | 0 0 0 | 2 0 11 | 0 11 5 | 0 8 8 | 0 14 1 | 0 4 10 | 0 3 8 |
| Buttacudaley. | 83 | 240 | 317 | 200 | 5·5 | 40 ,, 1 | 16,6 00 | 1,766 | 221 | 0 2 8 | 1 9 0 | 12 8 0 | 2 0 11 | 0 11 5 | 0 8 8 | 0 14 1 | 0 4 10 | 0 3 8 |
| Shanungee.... | 55 | 159 | 210 | 300 | 8·4 | 30 ,, 1 | 16,500 | 1,755 | 220 | 0 2 8 | 1 9 0 | 12 8 0 | 2 0 11 | 0 11 5 | 0 8 8 | 0 14 1 | 0 4 10 | 0 3 8 |
| Garlic........ | 132 | 381 | 504 | 600 | 16·8 | 48 ,, 1 | 79,200 | 8,425 | 1053 | 0 0 10 | 0 8 0 | 4 0 0 | 3 8 5 | 1 3 6 | 0 8 8 | 2 14 7 | 0 12 9 | 0 9 10 |
| Onions. ...... | 31 | 90 | 141 | 700 | 20· | 56 ,, 1 | 21,700 | 2,308 | 288 | 0 1 1 | 0 10 2 | 5 1 4 | 3 8 5 | 1 3 6 | 0 14 9 | 2 5 7 | 0 12 9 | 0 9 10 |
| Mustard Seed | 122 | 352 | 491 | 300 | 8·4 | 150 ,, 1 | 36,600 | 3,893 | 487 | 0 0 10 | 0 8 0 | 4 0 0 | 3 8 5 | 1 3 6 | 0 14 9 | 2 5 7 | 0 12 9 | 9 9 10 |
| Verdium..... | 67 | 194 | 256 | 200 | 5·6 | 100 ,, 1 | 13,400 | 1,425 | 178 | 0 1 0 | 0 9 5 | 4 11 4 | 3 8 5 | 1 3 6 | 0 14 9 | 2 5 7 | 0 12 9 | 9 9 10 |
| Poppy Seed and Opium | 93 | 269 | 353 | 100 | 2·8 | 100 ,, 1 | 9,300 | 990 | 124 | 0 4 0 | 2 5 7 | 0 0 0 | 3 8 5 | 1 3 6 | 0 14 9 | 2 5 7 | 0 12 9 | 9 9 10 |
| | | | | 2⅗ lbs. per Vullum. | | ,, | 242 lbs. Avoirdupois. | | | 3 0 0 | per Seer=Rs. 5 per lb. | | included with the seed in the Assessment. | | | | | |
| Potatoes...... | 49 | 141 | 186 | 600 Mds. ,, | | 15 ,, 1 | 29,400 Mds.=cwt. 6562 | | | 0 6 0 | per Maund=R. 1 ,, 11 per lb. | | | | | | | |
| | 3981 | 11,510 | 15,220 | Acres of land under cultivation. | | | | | | | | | 7 0 0 | 2 6 9 | 1 13 4 | 5 0 0 | 1 | 11 8 | 1 5 0 |

cows kept for nothing but 5 shillings a month for a herdsman, with a per centage to cover interest on outlay and casualties, it cannot be doubted that the meat cured in this climate would both prove of excellent quality, and return, by its sale at Bombay or other shipping ports, a considerable profit to the breeder and salter. Under any circumstances larger profits must be realized than those returned from the same market to the exporter from Europe, who has to breed his stock under all the disadvantages of dear food and labour, and cost of freight to its destined port of sale.

Hides.

Amongst the productions of the Neilgherries may be enumerated hides, both of the buffalo and ox, the former of which are especially prized in the low country for making soles of shoes, traces and other articles requiring a strong and durable leather. The hide of the bull buffalo is considered far superior in value to that of the cow. I have not been able to ascertain what quantity of hides are annually collected and cured here for export, but it cannot at present be very considerable, as it will be seen by the returns in the appendix that the total number of buffaloes and bullocks herded on these Hills is, comparatively speaking, by no means large.

Opium.

Opium is produced on the Neilgherries to a small extent, and it appears that the Burghers who cultivate the poppy pay more attention to the collection of the seed (which fetches a very remunerative price as an article of food in the bazaars) than to the extraction of the drug from the capsules of the plant. The total quantity produced last year was under 200 lbs. avoirdupois, but I have no doubt it could be increased very greatly if other cultivators could be introduced on the Hills; as the Burghers, slaves to habit, prejudice, and the love of ease, oppose themselves to any change or improvement which involves additional trouble or personal labour.

Poppy fields require some care both in preparing and well manuring the ground before sowing, and in hoeing and irrigating it whilst the plants are young. Hence this kind of cultivation is only carried on in the immediate vicinity of their villages, where the fields can be attended to by the women and children, and where manure, such as it is, is more readily, and with less trouble, collected.

Neilgherry opium of very fine quality.

The opium extracted by the Burghers from their poppies appears to be of exceedingly fine

quality, and meets with a ready sale in the bazaars of Ootacamund amongst the Mysore and Malabar coolies and others in better circumstances, by whom it is eaten in its raw state, but never, as far as I can learn, smoked.

Having thus reviewed the more important articles of agricultural produce, I am induced, before concluding the subject, to hazard the remark, that I cannot but consider that the lands comprising the plateau of these Hills, so valuable from their capacity for producing grains which cannot be cultivated in the low country which surrounds them, and which are so much needed for the public good, are, under the exclusive system which at present prevails, both misappropriated in their partial cultivation, and wastefully neglected, inasmuch as that there is not drawn from them that full amount of benefit to the community, which nature has so eminently qualified them to contribute.

The Neilgherries misappropriated and neglected.

On looking at the "Statement of productive resources" it will be seen that out of 11,500 cawnies at present under actual cultivation, only 4,300 cawnies are devoted to the production of wheat and barley, while on all the rest of the land grains are reared, which, with only one or two exceptions, are grown just as well, and far cheaper, in the plains below, and would be brought up and bartered for wheat to any extent, could this much wanted grain be procured on the Hills in greater quantity. It will scarcely be credited that this district so peculiarly well adapted for the cultivation of wheat actually does not produce enough to supply the bakeries of the principal settlement, for the use of which large quantities of a very inferior description of grain are imported from Mysore; while the minor settlements of Coonoor and Kotergherry are supplied with bread from Coimbatore.

Hill wheat certainly finds its way to the low country, by being bartered by the Burghers with the traders for cloths and other articles, but the quantity thus exported is insignificant, and bears no comparison with that imported from Mysore.

Silk.

There remain yet a few articles of plantation produce to be noticed, the oldest of which, in the agricultural history of the Neilgherries, is silk. There are several plantations of mulberry trees in various parts of the Hills, for the breeding of the silk worm, with establishments for preparing and

winding the cocoons, the silk produced by which has, I understand, been pronounced in London to be of a quality very far superior to any produced in the plains, either in Bengal or other parts of India; and what has been sent to England appears to have realized very high prices. The quantity produced however has hitherto been very insignificant, and I confess, as far as I am able to judge, the scheme appears a complete failure. The mulberry trees do not shoot out fresh leaves with that redundant luxuriance which distinguishes all other descriptions of vegetation on these Hills; the weeding, watering, and pruning which they require involves much expense; the worms require the most delicate treatment, both in regard to food and temperature, any mismanagement of which entails destruction on myriads, and the quantity of cocoons produced is not in a sufficiently large proportion to allow the superior quality of the silk reeled from them to secure a profit to the planter.

Already one extensive plantation, and worm and silk house, at Coonoor, has been given up; and I should think it will not be found that this description of cultivation will be extended by future settlers.

Coffee.

Numerous plantations of coffee trees are scattered about the Hills, principally situated on the slopes descending to the plains, where the elevation suitable for the growth of this shrub can be obtained. Until within the last two or three years, coffee plantations were only found on the eastern side of the Hills, but representations of the excellent quality of the berry, and of the advantages attending its cultivation on the Neilgherries, having been made in Ceylon, the attention of the skilful planters of that island was attracted in this direction, and the result has been the opening of several plantations, where I ventured to predict, in a former memoir, that this description of cultivation would sooner or later be introduced, viz., on the western slopes of the Hills, where advantages are offered to the planter eminently superior to those, the possession of which has, of late years, so greatly enhanced the value and importance of the neighbouring island.

Cheap labour, 4 Rupees a month.

The chief of all is the cheapness of labour, a cooly receiving even on distant plantations in the "Koondahs" 4 rupees a month, while in Ceylon 8, 9 and even 10 are given; while in the pay of artizans such as carpenters, sawyers, masons, &c., a still greater disparity exists in favor of this district.

Second to this is the abundance of labour which can always be commanded here, the neighbouring provinces of Malabar, Mysore, and Coimbatore supplying coolies in sufficient numbers to meet all demands, and at all seasons of the year ; while in Ceylon the utmost difficulty is experienced in most parts to obtain labourers when urgently required ; and at all times the supply of coolies is extremely precarious. Planters here have also the advantage of a good public road passing through the heart of the forest land of the "Koondahs," and affording ready means for obtaining supplies, machinery, &c., or of sending away produce for shipment by a route, of which less than 30 miles are by land and 36 by water, to the port of Calicut. One estate which was opened about 2 years ago near "Wallahkadoo," half way down the Koondah ghaut, by the late Archdeacon of Ceylon and Mr. Hutson, also of that island, and which I had an opportunity of inspecting recently, on my way up from the western coast, is in a very flourishing condition, and has every promise of turning out most successfully. In its neighbourhood are tracts of virgin forest land of immense extent, stretching away over the innumerable spurs and vallies into which the Koondahs are broken as they slope downwards towards the Ponany river, all eminently suitable for coffee planting, having the proper elevation, a good and rich soil, and enjoying a climate particularly favorable to the nourishment of this peculiar shrub. If the success which is looked for crowns the exertions and adventure of the first speculators, there can be little doubt that when the Koondah coffee appears regularly in the market as a production of this district, the attention of capitalists at home will be directed to it, and the western portion of this mountain tract become a source of great increase to the revenue of the country, while it will afford employment and subsistence to the many indigent people in the neighbouring provinces, who, at the present time, suffer such privations from the want of it, between the seasons of sowing and reaping the crops in the plains, and indeed for more than three quarters of the year.

Western slopes of the Koondahs well suited for coffee cultivation.

The other, or what may be called the old plantations in the other parts of the Hills, but principally on the north-eastern slopes, are insignificant in point of size, but remarkable for the peculiarly fine flavour of the coffee produced, which is considered to be owing to the high elevation at which most of them are situated. Some plantations

Plantations at Coonoor and Kotergherry too high.

near Coonoor and Kotergherry are 5,000 feet above the level of the sea, but it seems to me that the advantage derived from this superiority of flavour is more than counterbalanced by the general want of vigour and luxuriance of the coffee trees, which evidently do not thrive in this latitude so well at an elevation above 4,500 feet, as between that and 3,000 feet. It is not easy to estimate the amount of land at present under actual cultivation for coffee on the Neilgherries, as, in most cases, the coffee fields are so mixed up with the mulberry grounds, that it is difficult to arrive at the precise extent of each, but it may be pronounced not to exceed 280 acres on the eastern side, and 300 acres on the western. The general return of those on the eastern side, which are the only ones at present in bearing, is on an average about 6 to 7 cwt. per acre; which is a remunerative rate under the prevailing circumstances of cheap labour, but the trees require manure to keep them up to this rate of bearing, and more care in pruning and managing than is bestowed upon them.

Salt Provisions.

Salt provisions may be mentioned as an article of produce of the Neilgherries, though the preparation of them is not carried on in an extensive way. Hams, bacon, salt pork, &c., are cured in the settlements and sold at a cheap rate: some cured by European settlers being of excellent quality. I am informed that the Bombay government were anxious sometime since to enter into a contract for the supply of the Indian Navy with salt provisions, in lieu of those prepared for government use in the unsuitable climate of Bombay; but the opportunity of establishing this branch of productive industry on a firm and regular footing was lost, owing to there being no person on the Hills who could be induced to undertake the responsibility of so extensive an engagement.

Stock for salting could be fed economically.

The feeding of stock, if connected with a proper farm on which to raise dry food and support cattle, could be carried on most economically here, especially as regards pigs whose chief food, potatoes, is raised on the Hills out of almost any soil and with a most profitable return. There might be more difficulty in fattening oxen for the salting tub because the pasturage on these Hills, though for the most part luxuriant is rank and fibrous, and does not appear to produce fat or flesh in ruminating animals, except in the case of the Hill buffaloe which alone thrives upon it; but as mangel wurzel has been tried and seems to take very kindly to the climate and soil, this difficulty might be overcome by its introduction. A good English grazier also would soon

exterminate the bad grass out of his land, and replace it by grass from good mixed seed from home, which experience (on a small scale) has shown to thrive well on these Hills. Clover and lucerne also flourish here, especially on lands not more than 6,000 feet elevated above the level of the sea—in fact under a proper system there never could be any want of dry as well as green food for fattening stock, felt in this district.

Fuel likely to become scarce on the Hills.

There is another subject which before closing this chapter I am anxious to draw attention to, and that is the supply of firewood obtained from the woods with which the surface of the Hills is dotted. This may at a casual glance appear comparatively inexhaustible, but I am satisfied it is not so, and that to preserve in localities, where it may be called available for general use, a provision for future years, some measures of conservation should be adopted; more especially should European troops with the host of Natives who will follow them, be permanently located on the Neilgherries. At present, while hundreds of trees are being felled daily, not one is planted, and it is reasonable to anticipate, that unless some system is adopted to conserve and renew the woods, particularly in the neighbourhood of the projected barracks, government will before long be put to a heavy expense in supplying the troops with this necessary of life from a distance.

Modes of cultivation.

The modes of cultivation adopted by the agricultural Hill tribes have been, already, so frequently adverted to in the preceding chapter on productions, that it will be only necessary here briefly to review them. I have described their system of agriculture as radically bad: and it is so for these reasons; first, because the land is not properly ploughed; secondly, because it is not properly manured and dressed; and thirdly, because no change is ever made in the seed which they sow in it; not even to the extent of bringing it from neighbouring villages, the Burghers sowing the same seed over and over again in the same soil, until an inevitable deterioration takes place in the product.

Ploughs very bad.

The plough used is a most wretched implement, the share being almost invariably a piece of pointed wood, of a tough description, hardened in the fire, and not shod with iron, or any other metal. Owing to this, and to the clumsy form of the plough, which gives the man at the tail but little power over the instrument, the land is not furrowed or turned up beyond a

depth of 6 inches, and consequently fresh and unworked soil is never worked up to the surface, but the top soil is alone made use of. The consequence of this, and other causes, is that they can take but one crop off their lands, of wheat and barley, and are then compelled to let them lie fallow always for two, and generally for three years before they are again brought under the plough. Attempts were, I believe, made some time back to introduce cast iron ploughs amongst the Burghers, but, of course, without success; first, because of the obstruction which their prejudices opposed to the introduction of the novelty; and secondly, because there were no Europeans to show them how to use them, or how to team their little diminutive cattle so as to enable them to drag them. It would be useless therefore to attempt to make them use a better description of plough, until the means for instructing them in its use could be commanded; and here again we see the advantages which a model government farm would present, in the facility with which all such innovations upon their old vicious system could be practically illustrated, and made available for those, for whose improvement it was introduced. At present, instead of making one plough perform the work of furrowing the ground to the required depth, six or seven ploughs are employed, each following precisely in the track of its predecessor, the spike of the one deepening the small trenches scraped by the other; until, when the last has passed, it has been made what they consider deep enough, when they turn and form a new one. The ground is then worked, chiefly by boys and women, with a small hand hoe (for they have no harrows or any other farming implement besides the plough), and the grass and weeds collected with the hand into small heaps, and afterwards burned. Manure is then thrown over the fields and slightly worked in, and it is then considered fit for the seed. The wretched quality of the manure which they use, next requires notice.

Neglect of manure.

They have no knowledge whatever of the way to produce or manufacture, if the term may be used, manure, by heaping the dung of their cattle, and covering it in with alternate layers of soil, and vegetable substances; but merely take the dung, which has been lying exposed to the sun and weather for months, the whole of the nutritious gases having escaped and its fermentation being long since over, and apply it in its dry and hard, and all but useless state, to the land.

The consequence of course is, that the soil derives but little or no benefit from the manuring, no heat is communicated to it to encourage the seeds to germinate, or to stimulate and invigorate the growth of the young plant, and the grain produced is small, light, and poor. There is no doubt, as I have already remarked, that lime is the manure most needed to improve the general soil of the Neilgherries, but the expense of this material of course deters the native cultivators, whose ideas cannot be carried beyond the prospects and returns of the current year, from using it. But this expense, under a proper system of farming, would be found light, as in all probability about 40 bullock loads, or 2 tons of lime per acre, applied once in 5 years, would be found sufficient to produce a very great and remunerative improvement in the crops raised.

Lime dressing for the soil.

Expense 25 Rs. per acre, once in 5 years.

This quantity would cost, for lands situated within 2 or 3 miles of any of the passes or ghauts, about 25 rupees, and as the lime burners are always glad to receive Hill produce in barter for their commodity for the sake of keeping their cattle employed, the cultivators would not be called upon to find capital to invest in this part of their farming operations.

A most essential point on which the Hill cultivators stand in great need of instruction is—the preparation of manure, for which the climate, with its sharp sun heat in the day, and its cold dewy nights, so favorable to the promotion of decomposition, and the abundance of vegetable matter rich in alkali, such as the fern, which is to be found all over the Hills, affords great facilities. Every Burgher and Kother village has a large herd of cattle attached to it, which are penned during the night in a large circular pen surrounded with stone walls, and allowed to graze over the country during the day. They are never littered at night, and their ordure is allowed to accumulate and lie exposed to the sun in the pen, until it becomes an inconvenience to the cattle, when it is removed and thrown outside, and left, as before, uncovered and exposed to waste away. Now if a few trusses of fern were to be strewed occasionally over the pen, and all the collections, down to the scrapings of the soil, removed frequently and laid in layers with soil, weeds, fern or other green vegetable matter alternately, the nutritive gases of the dung would be retained, the decomposition of the mass

Preparation of manure.

would proceed by slow fermentation, and by continually adding to the heap or forming new ones, every village would have ready for use at the time of sowing, which is as soon as the frosts have ceased, a large stock of the very best and richest manure, instead of the small quantity of almost useless stuff which they now employ. I believe it has been ascertained in England that this system of covering in the layers of manure with soil, adds 50 per cent. to its value, both because the gaseous matter is retained thereby, and because, by its action, the earth laid on becomes impregnated with ammoniacal and other salts, and forms an adjunct to the dung when worked up with it. It is not therefore too much to say that by the introduction of a better system of preparing manure, or rather by the introduction of a system where none now prevails, the produce of the lands cultivated by the Hill tribes would be increased by 50 to 100 per cent., and it would moreover enable them to bring more land under the plough, and avert the necessity which they find, or consider to exist, for allowing their corn lands to lie fallow 2 or 3 years for 1 year of crop. Indolence combined with apathy, is, however, the prime cause of their deficient system of agriculture; for, I firmly believe, that were fine manure heaps prepared in this way for their use, they would, avaricious as they are, prefer letting a field, capable, if sufficient manure were applied, of producing a crop of wheat, remain fallow through the year, to carrying the manure to it if it lay at the distance of a mile or so off.

No carts employed on farms.

They never use carts to carry manure to their fields or to bring produce home, every thing being carried on their heads, although, in many parts of the Hills, the features of the ground would admit of the light bandy of the country being employed very advantageously. Such an innovation would however never be dreamed of. Thus it is that this fine district, capable of being turned to such great account, is perverted in its use, and undeveloped in its resources: grains, which can be produced in almost any soil and in the sultry climate of the plains, raised on its lands because they require no manure, or but little, to nourish them, and because their culture, and future management involve no great labour or trouble to the holders of the soil. A striking contrast in respect of agricultural industry, and a desire to improve, is presented by the system pursued by the emigrant natives from the

Native emigrants from the plains more industrious than the Burghers.

plains, who have settled in various parts of the Hills, principally in the vicinity of the European stations, and employ themselves in cultivating small patches of land for potatoes, turnips and other European vegetables. These men having had the value of the soil pointed out to them, are now commencing in various parts to drain and reclaim the bog lands, and raise upon them crops of the very finest Potatoes, with a very small outlay. Their enterprize is however circumscribed by the absence of an extensive demand, and by the want of dealers who might buy up the surplus stock in the settlements, and send the commodity either to Ceylon, where a highly remunerative market would be found, or to the several large stations in the plains where the demand is always active.

Wheat, barley, &c., sown in April and reaped in July and August.

Wheat, barley, and most of the other kinds of grain produced on these Hills are sown generally in April, when the frosty weather has entirely passed away, and the crops are cut if the season has been favourable in July. Poppy seed however is sown in October, and the drug collected in January, as it is found that the opium exudes more freely, and of greater consistency and richness, in frosty than in warm weather. For potatoes no particular time is observed, the sets being put in the ground in any month, except the most frosty ones of December and January, and as soon as one crop is taken up, which is in three months from the time of setting, the land is manured, dug and hoed, and fresh sets put in without any delay, so as to ensure three full crops during the twelve months.

Three crops of potatoes raised annually from the same land.

Prices of principal products.

The prices of all the grains produced on these Hills have been already given in the table at page 26; it is therefore only necessary here to particularize those productions which have not found a place in that return.

*Coffee.*—The average price of coffee in the bazar is 5 rupees per maund of 25 lbs: but it fluctuates much, being at the present moment not more than 4 rupees a maund, owing to the anxiety of growers to get rid of their crops picked in November and December on the spot, to avoid the expense and risk of sending them to Madras or to the western coast for shipment.

*Silk.*—For this article there is no sale on the Neilgherries.

*Hides.*—These are to be obtained, but in limited quantities—Buffalo hides are sold at 2 rupees each and ox hides at 9 annas.

*Building Materials.*—(At Ootacamund) bricks per 1000, rupees 2; tiles per ditto, rupees 1 12; teakwood and chunam are brought, the one from Seegoor and the other from the province of Coimbatoor.

*Salt Provisions.*—Hams are sold at 5 annas per lb.; bacon at 4 annas per lb.

*Butter.*—Fresh, 1 rupee per pound.

*Jungle-wood.*—The best description is the "Bastard cedar" which is now extensively used for flooring planks and doors, shelves, &c., in house building. The price is about 7 annas per 12 square feet of one inch thick. Rafters, lintels, beams, &c., in proportion.

*Bees Wax.*—Unbleached, is sold by the Erulars and Coorumbers at $\frac{1}{4}$ rupee per seer.

*Castor Oil.*—Of very excellent quality is expressed here, and is sold at 3 annas per quart bottle, or about 1 rupee per imperial gallon.

The prices of these articles of course differ at each of the three settlements, but the difference is slight and not worth recording in this statement.

Tenure and occupation.

Land is held on the Neilgherries by European settlers, under a putteum or grant from Government leasing it to them in perpetuity, so long as the regulated assessment is paid. In the cantonment of Ootacamund grants are made of the land without any fee being exacted, but beyond its limits, as every spot, whether utterly barren and incapable of production, or only untilled waste, is laid claim to by either the Todars, the Burghers, or the Kothers, the land has to be purchased from one or other of these tribes, who exact such price as they think fit. After such purchase has been effected it is necessary to apply to the Collector of the district for a putteum, or acknowledgment of right to occupy and cultivate, though this may be considered a matter of mere form. The tenure of land by the various Hill tribes will be more fully entered on in describing each separate race of people; it will therefore only be necessary to record here, for the sake of reference, the general circumstances which rule it.

Tenure of the Todars.

Todars hold their land, which they consider to extend over the whole plateau, by right of immemorial occupation, alleging that their ancestors came to the Neilgherries before there were any kings or sovereign rulers in southern India, and never paid tax or tribute to any one.

Tenure of the Burghers.

The Burghers hold their land, which, if their vague claims are to be allowed, may be stated as comprising two-thirds of the whole Hill plateau, nominally by permission of the Todars, to whom they pay in acknowledgment of the proprietary right of the latter a "goodoo," or tribute (being synonymous with the word "Yomeah" in Hindustani) which ought, according to the claims of the Todars, to amount to $\frac{1}{6}$th of every description of grain produced by the cultivators. This "goodoo" is, however, evaded to a great extent, the Burghers giving to the Todars just what quantity of grain they think fit to part with, and of those descriptions which they can the most readily spare; while some refuse to give any thing at all until compelled by the Todars. This system, in its enforcement without the direct sanction of government, naturally leads to much wrangling and confusion, and may hereafter be productive of mischievous consequences, as the sentiments of the Burghers change, and they view, as they already I think begin to do, this "goodoo" in the light of an illegal and unauthorized impost. They admit that before the days of the East India Company they used to pay $\frac{1}{6}$th of their produce to the Todars, but that was when their number was small; and when more of their tribe came from the north country to join them, and when they began to imbibe notions of independence from the Europeans, they reduced their tribute, until it has arrived at its present footing, that of a "Yomeah" or voluntary contribution.

In speaking of the collection of the "goodoo" by the Todars, the Burghers speak of the collectors as "peechakarur" (which means "beggars"), a term sufficiently explanatory of their view of the question of right on the part of the Todars to demand the tribute.

Tenure of the Kothers and Erulars.

The Kothers hold their lands under the same terms. The Erulars hold the patches of land which they cultivate and which are all situated to the eastward, near Rungaswamy peak and the Kotergherry pass, independent of the Todars, who profess not to assert any proprietary right over the lands which extend below the actual summit or plateau of the Hills. The Erulars have a loose kind of tenure of their land, holding it at pleasure so long as they pay the assessment. But they cultivate so little that it is scarcely worth noticing.

Modes and rate of assessment.

The assessment on lands on the Neilgherries is divided into two classes, one applicable to

those held by the native agriculturists, and the other to those occupied by European settlers.

It is levied on the former according to the measurement of fields actually bearing crop, estimated in "vullums" (pronounced sometimes "bullahs"), each vullum being equivalent to 2 cawnies, 21 grounds, and 864 square feet; or in English measurement 1 vullum $= 3\frac{41}{50}$ acres: the rate of assessment being fixed according to the nature and abundance of the crop which the land is bearing at the time of measurement. When harvest time approaches the ghomastahs and curnums proceed to the different villages, and form an estimate of the probable out-turn of the crop on each field from its appearance, rating it as first class if it promises to be abundant, and as 2d class if otherwise.

The highest rate levied is on lands cultivated for potatoes which pay

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 7 | rupees | per | vullum | for | 1st | class ground. |
| and | 5 | ,, | ,, | do. | ,, | 2d | ,, do. |

The next rate in the scale of assessment is applied to lands bearing

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Wheat, which pay for 1st class | ground | Rs. | 3 | 8 | 5 |
| and ,, 2d ,, | do. | ,, | 2 | 5 | 7 |
| Barley, which pay for 1st ,, | do. | ,, | 3 | 8 | 5 |
| and ,, 2d ,, | do. | ,, | 2 | 5 | 7 |

per vullum, and the same for poppy, vendium, mustard seed, garlic and onions.

The lowest rate applies to raggee, samee, koralley, peas, shanungee and tenney, all of which pay Rs. 2 0 11 per vullum, for 1st class land, and for 2d class ,, 0 14 1 do.

For further particulars regarding these rates of assessment and their equivalents per cawny and per acre, I may refer to the table at page 26 of this memoir.

Lands held by Europeans, whether by grant of Government within the limits of the cantonment, or purchased from the Hill people in more distant localities, pay assessment as follows:

For ground occupied as sites of buildings....Rs. 5 4 0 per cawny
For ground appropriated for gardens and general agricultural purposes................. ,, 1 2 4 do.

Labour employed and its remuneration.

The description of people, available on the Neilgherries as labourers, differs according to the situation of the land on which they are required to work.

Thus in, and about the settlement of Ootacamund, the coolies employed are all emigrants from the plains of Canara, Malabar and Coimbatore, or from the Mysore territory; the Canarese and Mysoreans being the most numerous.

Their remuneration is commonly 2½ annas per day, or 3½d.

In the vicinity of Burgher villages, and especially about Coonoor and Kotergherry, Burgher labour is available in abundance at the rate of 2 annas per diem, and they are extensively employed by settlers to cultivate their gardens and to work on plantations. Carpenters and bricklayers are mostly people from Paulghaut in Malabar, or from Coimbatore; their rates of pay vary according to their expertness, from 8 annas a day to 6. Stone cutters work by the piece, receiving on an average, for smoothed granite slabs, steps, coping stones, &c. 8 annas per running foot, of about 1 foot by 6 or 8 inches, breadth and depth; sawyers in like manner work by the piece, at the rate of about Rs. 2¼ per 100 feet of surface cut. It is difficult to obtain the services of this class of artizans on the Hills, as they all resort to the teak forests at Musneum Coil and Tippacadoo, near Seegoor, where they always find abundant employment.

Brick makers and tile makers work of course by contract, at the rates already specified under the head "Prices of principal products."

There are several tolerable blacksmiths, silversmiths, and abundance of tailors settled in Ootacamund and the minor stations; while on the eastern side of the Hills the Kothers are generally employed as artizans for rough smith's and carpenter's work.

These Hills possess a great advantage in regard to labour, which is, and always must be, abundant; because as soon as the seed is put into the ground in the adjacent low country, the poorer class, or labouring men, are thrown out of employment until harvest time is past, unless some extensive public work happens to be in progress, and therefore come to the Neilgherries for work in preference to wandering away to Ceylon and other parts to search for it, whenever a demand exists here for their services.

The common rate of pay to all such labourers employed on plantations is 4 rupees a month, and for this sum they labour contentedly for 9 hours a day, performing work which, though it cannot be compared with negro labour, must nevertheless be pronounced cheaply remunerated at the rate quoted above.

Rivers.

There are no navigable rivers in the Hill district, although one of the many which take their rise amongst these mountains called the "Moyaar" swells into a stream of considerable width and depth at Pykara, where it is crossed by means of a double ferry boat and a ford. This river rises at the foot of the remarkable mountain called "Makoorty Peak," receives the drainage waters of the Pichul and Pykara vallies, and, descending the Hills at the N. W. angle by a fall near Neddiwuttum, turns due east after reaching the plains, and flowing round the base of the Neilgherries on the northern and eastern faces, unites itself, near Danaikencotta in Coimbatore, with the Bowany.

The Moyaar.

The Bowany.

This latter river takes its rise amongst the southern spurs of the Koondahs, receiving near the foot of the Madoor or Shoondaputty ghaut a large tributary which rises near the "Avalanche" on the N. E. face of the Koondahs, and swelling into a large stream near Matepolliem, where it is crossed by a large masonry bridge, continues its course eastward, after its junction with the Moyaar, until it flows into the great Cauvery near the town of Bowany.

The Calicut river.

Another important river, which also owes its origin to the Neilgherries, is that which flows into the sea at Beypoor near Calicut. The head of this stream is formed by the drainage of the elevated tabular mass of hills, which have been before described as occurring to the N. W. at Neddiwuttum, and though it descends the face of the Hills at no great distance from the fall of the Moyaar, the intervention of a sharp spur diverts its course into an exactly opposite direction, forcing it over the ridge called the Carcoor or Yellamullay Hills to find its way to its embouchure on the western Coast, while the waters of the Moyaar discharge themselves into the sea on the eastern.

Swamps useful in retaining water.

The Neilgherry mountains afford a great, and, practically speaking, inexhaustible supply of water by means of the innumerable swamps and morasses which occupy the hollows of most of the vallies, particularly to the westward and northward.

The rain which falls during the wet season instead of running off to waste at once, as it does from the surface of the hard ground, is imbibed and retained by these morasses to such an extent, that through-

out the year, including the whole of the dry monsoon, a constant and abundant supply of water is yielded from these natural reservoirs, which seem provided to obviate what, but for their occurrence, might, after unusually dry seasons, be the evil of drought in the district.

Owing to this cause there is scarcely a stream or rivulet on the Neilgherries, which ever completely dries up at any period of the year, even in the most unfavorable weather, and hence a supply of water is constantly descending, to swell and feed the streams by which the surrounding low country is irrigated.

Lake.

The only sheet of water which merits the appellation of a lake is one situated at Ootacamund within the cantonment, formed by throwing an embankment across the narrow outlet of a valley through which a considerable stream, fed by numerous swamps in the neighbourhood, used to flow, and thus arresting its waters, and accumulating them so as to form a lake or tank. The object with which this sheet of water was produced was purely ornamental, a drive having been made round it for recreation and exercise, resorted to by the residents of Ootacamund. The surplus water is drawn off by means of a sluice at the bottom of the embankment, and continues its course to the north as before.

Means of irrigation.

Gardens and cultivated grounds requiring a regular supply of water (as poppy fields) are irrigated, where circumstances allow of it, by means of channels led off from the valley streams ; but the dry grain cultivation in the different parts of the Hills is sufficiently assisted by the rains and by the moisture which the soil, from its composition and depth, has a great tendency to retain.

As the value of land increases on these Hills, and their capabilities become more thoroughly appreciated—as begins to be already apparent from the increase of permanent settlers on them, both European and native—it will I think be found highly necessary to establish some stringent regulations for the control and appropriation of the water of the Hill streams. In the valuable despatch of the Honorable Court of Directors to the Supreme Government upon the subject of the Dheyra Doon and Gorruckpore survey, dated 23d February, 1842, by the resolutions laid down in which it would appear by their despatch to the Government of Fort St. George, para. 12, No. 13 of 1843, Revenue Department, the Honorable Court desire that all matters relating to the Neilgherry district should be adjudicated, it is

specified (in para. 63) "that the control of all streams and canals be in the hands of government."

Much litigation constantly going on about rights of water.

This principle of control does not certainly obtain in this district at the present time—parties cutting channels and leading off water from a convenient stream at pleasure, without any permission asked or obtained from the civil authorities, and frequently without the consent or knowledge of the proprietors of lands through which their channels are brought. No system is observed in the management of these channels, so that where a slight deviation in their course might render the water available for neighbouring lands, we find such a principle of accommodation neglected, and frequently an immense and reckless waste of the element permitted, amounting to a hundred times more than is made in any way available by the self constituted proprietor. Other parties again, whose land lies between a head of water and the ground of another proprietor, refuse permission to the latter to lead it through their premises, to his own, thereby inflicting injury on the individual, and causing detriment to "the property of government," for as such, under para. 61 of the Dheyra Doon Despatch, the Honorable Court have decided that "all grants are to be considered," being merely held as "leasehold land under Government." On this subject I would beg leave to suggest that as "Government are to retain control of all streams" on these Hills, and as the lands cultivated as gardens pay a high rate of assessment, the same system as to the distribution of water for the use of each proprietor, should be followed in this district, as prevails in the low country, where not a cubic foot is allowed to be wasted or misappropriated. This interference on the part of the Government authorities does not seem called for in any other parts of the Hills than the stations where Europeans, East Indians, and Natives have settled, viz., Ootacamund, Coonoor, and Kotergherry, as the Burghers and other aboriginal cultivators make no use of water for the purpose of irrigation save for poppy, onion and garlic fields, which are not so numerous as to have given rise to any disagreement between adjacent villages upon the subject: whereas at the settlements it affords a fertile, and constantly recurring cause for litigation and misunderstanding.

Towns and villages.

The only town on the Hills, properly so called is "Ootacamund," and even this term can only be applied legitimately to the native portion of the settlement, since

the residences of Europeans are too widely dispersed along the slopes of the valley in which the station is situated, to admit, at present, of its further extension. So rapidly however is the number of houses increasing and keeping pace with the increased resort of Europeans to these Hills from almost all parts of India, while at the same time a consequently augmented demand for supplies for the European community is daily drawing more native merchants and traders to the place as permanent settlers, and thus swelling the size of the bazaars beyond all bounds, that before long the term "town" will not be inappropriately applied to the whole settlement, while that of "cantonment" will be transferred to the valley of Jukatalla where the European barracks are about to be built. The houses of the European inhabitants of the settlement are for the most part substantially built; the walls are usually of burnt brick set in clay, and pointed or plastered with lime, roofs of tiles, or puckka terraced, and rarely of thatch, while all the timber work of the roof, doors, floors, &c., &c., is of teak, which is brought at a great cost up the Seegoor pass from the forests on the borders of Mysore. There are however many excellent and durable descriptions of house building timber to be procured on the Hills at one quarter the cost of teak; but a prejudice exists against their use, because roofs constructed with Hill grown timber have, in some instances, been found to decay with great rapidity; and hence its employment has been condemned by builders, who have overlooked the real cause of its decomposition, which is its being put together and covered in before it has been sufficiently seasoned. As an instance of its efficiency, if attention is paid to this important point, and the wood properly selected, I may mention that the present survey office has a roof, made entirely of jungle wood cut on these Hills, which has been standing more than 20 years, and which on a recent examination was found to be perfectly sound. All other building materials (except lime) are procured on the spot, abundance of tolerably good brick clay being found in every part of the Hills.

Much good timber for building to be obtained on the Hills.

Bricks and tiles very bad.

The bricks and tiles made are, however, very inferior, but this is owing to the wretched way in which the clay is worked and moulded. A labourer mixes a little water with it with a mamotie, treads it for a few minutes with his feet, and then pronounces it tempered, and carries it to the moulder without further preparation. Bricks can be contracted for in Oota-

camund, delivered at the kiln at Rs. 2 per thousand; and tiles Rs. 1 ,, 12 per thousand. Lime, as I have elsewhere observed, does not occur, or at least has not yet been found, on these Hills; and

Lime dear.

hence, having to be brought on bullocks from the plains, it forms the most expensive item in building estimates. Its use is economized as much as possible in house architecture, by using mud as a cement to set the bricks in, in constructing walls, reserving lime only for use in turning arches, ridging the tiles in the roof, flooring, and either pointing or plaster-

Clay used as cement for walls.

ing the walls outside, with which protection, brick and mud walls are found to answer very well, especially if the roof over them is kept tight, and their surfaces screened from the beat of the rain against them by a verandah. In the bazaars of Ootacamund, which are called "the bazaar" and "Caundle bazaar," the houses are of all descriptions, both puckka and cutcha. The streets are wide and well kept by the police authorities, by whom a tax varying from 1 anna to 1½ on each house per mensem is levied to support the scavenger establishment, the residue being paid into the public treasury—and if good regulations are enforced as regards the laying out of future quarters of residence, already fast extending, the town which the bazaars will constitute will become a very cleanly and compact one—and hence doubtless healthy also. It has the advantage of being bordered by the lake or tank, which adds of course materially to its means of preserving cleanliness.

The following is a return of the European and Native population of the three settlements taken in February, 1848, and although many present inhabitants with their servants and followers will have left the Hills before the year ends, the total numbers may yet be taken as a pretty correct average of those usually residing, as of course the place of those removing is soon occupied by fresh comers from the plains.

*Population of the European settlements on the Neilgherry Hills.*

| | Europeans. | | | | East Indians. | | | | Hindoos. | | | | Mussulmauns. | | | | Pariahs. | | | | Number of European Houses. | Number of Native Houses. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Adults. | | Children. | | Adults. | | Children. | | Adults. | | Children. | | Adults. | | Children. | | Adults. | | Children. | | | |
| | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | |
| Ootacamund, - - - | 93 | 97 | 57 | 66 | 38 | 34 | 22 | 23 | 935 | 828 | 431 | 501 | 341 | 238 | 130 | 143 | 1642 | 1506 | 732 | 752 | 146 | 1743 |
| Kotergherry, - - - | 9 | 5 | 4 | 4 | 8 | 6 | 11 | 12 | 49 | 49 | 17 | 20 | 7 | 5 | 3 | 1 | 56 | 55 | 22 | 24 | 15 | 98 |
| Coonoor, - - - | 5 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 80 | 65 | 32 | 29 | 9 | 9 | 8 | 7 | 50 | 60 | 20 | 19 | 15 | 131 |
| Aravungaad*, - - - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 6 | 7 | 4 | 4 | 0 | 12 |
| Total Population.. | 342 Souls. | | | | 154 Souls. | | | | 3045 Souls. | | | | 901 Souls. | | | | 4941 Souls. | | | | 176 | 1984 |

* A small Native settlement in "Sappers' valley," between Kaitee and Coonoor.

The settlement of "Ootacamund" is situated in an extensive open valley, almost in the exact centre of the Hills, open to the westward, but bounded on the north, east and south by the great Dodabetta range, or spurs projecting from it westward.

The settlement of "Coonoor" is situated on the crest of the Hills in the S. E. angle of their summit, the residences of the Europeans, including an hotel, being placed on the rounded tops of a range of hills which runs from a high mountain called "Coonoor-betta" towards the top of the pass, while the bazaar or native residences are in the hollow below, and adjacent to a masonry bridge which spans a wide stream flowing from the Jakatalla valley and descending the Hills at this point in a large volume of water.

The settlement of "Kotergherry" which with that of "Dimhutty" which is contiguous to it, is the oldest on the Hills, is situated in the N. E. angle of the plateau immediately overlooking the low country and at the head of the Kotergherry Ghaut. The bazaar which is increasing considerably in size, is built on the same range, with the residences of the Europeans.

"Dimhutty" cannot now be called a settlement, since there is but one habitable residence existing there ; all the bungalows built long since by government for the accommodation of invalids, having gone to ruin and become unfit to occupy or repair. The temperature is warmer at this place than at any of the other three settlements, and hence it is very rarely resorted to by Europeans. Under this head may be enumerated the Public bungalows and chettrums, or caravanserais, for the accommodation of travellers, Native and European, and which are under the control of the officer commanding the Neilgherries, and kept in repair by him at the public expense.

Accommodation for travellers.

*List of places of accommodation for Travellers.*

| | For Europeans. | For Natives. |
|---|---|---|
| At Ootacamund, | None. | 1 |
| „ Coonoor, | 1 | 1 |
| „ Kotergherry, | None. | None. |
| „ Neddiwuttum, | 1 | None. |
| „ Pykara, | 1 | None. |
| „ Kulhutty (Seegoor pass,). | 1 | None. |
| „ Nunjanaad (Koondah road,). | None. | 1 |
| „ Avalanche ( ditto ) | 1 | 1 |
| „ Burliar (Coonoor pass,) | None. | 1 |
| „ Kaitee (Coonoor road,) | None. | 1 |
| * Total on the Neilgherries | 5 | 6 |

* (Exclusive of the Koondahs.)

Villages. Situations and general description.

Toda munds.

The total number of Toda villages, called "Munds," on the Hills is 85, the whole of which, with the exception of 11, are situated in the division called the "Toda-naad" and almost all to the extreme west of that part, approaching the Pykara or Moyaar river. They seldom comprise more than three residences or huts, with one building consecrated to their deity, and which is also the dairy or place in which their milk, curds, ghee, &c., are kept, and one large circular pen for their cattle, surrounded by a substantial stone wall, and closed by sliding bars at one opening for entrance and exit. The sites chosen for these munds are in general most picturesque—always adjacent to a wood, and usually on an open space of grass almost completely embosomed in it, and extending in gentle slopes covered with the richest turf, which the grazing of their cattle (and the consequent manuring) maintains in the finest order. Their huts are low, arched buildings, resembling a hay cock, but admirably contrived to keep out rain and cold, the roof and side walls forming one continuous curve of split bamboos, rattan and thatch; having an end wall strongly built and a front wall with one small opening or door in it, so small indeed that the inhabitants have to crawl on their hands and knees to enter by it. Besides the dairy there is generally one small hut attached to the mund, in which the calves they breed are kept separate from their dams.

In addition to their villages or munds, the Todars have five sacred places in which only two men reside called "Polaul" and "Capilaul" devoted to a priestly life and living apart from the rest of their tribe. A temple and a cattle pen is attached to each of these sacred munds, which are usually situated in the bosom of a thick wood, so as to be screened from the vulgar gaze.

Burgher villages.

The villages of the Burghers are, in general very neat and clean, the houses, which are few in number, averaging 10 or 12, being built in a row on the summit of a low smooth hill, and having a wide level terrace running along the front, for the purpose of spreading out their grain to dry after damp weather, and also to pick and husk it on. They have usually two substantial cattle pens, or more, according to the size of the village, with high rough dry stone walls and barricaded entrances, to secure their cows and bullocks against cheetahs and tigers, which though not common on these Hills, occasionally find their way up from the forests below—and traverse the district, doing much mischief as

they pass. The houses are built with mud, or mud and stone, and covered with a good roof of thatch, grass for which is abundant in all parts of the Hills. There are altogether 227 Burgher villages on the Neilgherries, viz.

67 in Todanaad.
86 in Meykenaad.
and 74 in Parungenaad.

Kother villages.

The villages of the Kothers, from the fact of their low caste obliging them to consort together in large communities, present the most thriving appearance, and boast the largest number of houses, in general, of any of the Hill hamlets. But owing to their dirty habits, and the want of order in the arrangement of their dwellings, their villages have by no means the neat appearance presented by those of the Burghers. Mud and thatch are the principal materials with which their huts are built, but they form with them very substantial and weather proof buildings. There are six Kother villages on the plateau of the Neilgherries, and one near the foot of the Neddiwuttum pass, situated on a low spur projecting from the foot of "Goodlur Mullay," but as the survey does not include the site, it has been omitted in the return.

Erular villages.

The villages of the Erulars are more numerous, there being 22, all situated in the eastern part of the Hills. With a few exceptions they are very small, comprising only 5 or 6 houses and a couple of cattle pens. Their sites are selected in low spots, near the patches of plantain and other fruits which these people cultivate. The houses are of much the same description as those of the other tribes already described, and are generally very dirty. There are more Erulars to the south, but they are situated far below the plateau to which the survey has been restricted, and no account has, in consequence, been taken of them. The same is to be said of the Coorumbur villages, if indeed that term can be applied to the collections of scattered sheds, in which this wandering race are occasionally come upon in the jungles below the crests of the Hills. From their mode of life it is found impossible to obtain any return of their number.

Population.

Appended to this memoir will be found tables furnishing all particulars of the several tribes, constituting the body of aboriginal settlers on these Hills, and

of the European and other inhabitants of the three settlements. The following is the summary.

| | | | | Souls. | Souls. |
|---|---|---|---|---|---|
| | Europeans including Children | | | 0 | 342 |
| | East Indians | do. | do. | 0 | 154 |
| | Hindoos | do. | do. | 3045 | |
| | Mussulmauns | do. | do. | 901 | |
| | Pariahs | do. | do. | 4941 | |
| | | | | | 8,887 |
| *Hill Tribes.* | Todars | do. | do. | 337 | |
| | Burghers | do. | do. | 6569 | |
| | Kothers | do. | do. | 307 | |
| | Erulars | do. | do. | 461 | 7,674 |
| | TOTAL POPULATION OF THE NEILGHERRIES. | | | ...... | 17,057 |

Deducting from the total area of the plateau, that portion lying to the westward of the Pykara, or Moyaar river, which I have elsewhere described as almost entirely uninhabited, there remains a space of 420 square miles over which this population is distributed, giving a proportion of 40 souls to one square mile.

For the reasons already stated under the preceding head, no place or number can be assigned to the tribe of Coorumburs in this statement. Their number must however be very insignificant, probably not above 2 or 300 souls.

Employment.

With the exception of the Todars, who pass their days in utter idleness, all the aboriginal tribes, or mountaineers of the Neilgherries, devote themselves to agricultural pursuits. With these duties the Kothers alone combine those of the artizan in a humble way, as will be treated of in describing the people of that tribe.

The Todars, or Todawars.

Total number 337 souls.

This remarkable race differ in almost every essential respect from all other tribes of the natives of Hindustan, and their singular characteristics and strange habits have given rise to much speculation as to their origin and history. As no clue has however yet been discovered either in the form of monuments, coins, or even in their own traditions, by which research could be directed, all theories broached upon the subject cannot be otherwise than vain and illusory, especially those which have been based upon the assumption that the images, bones and other relics which are found in

the remarkable "cairns," discovered in such numbers all over the Hills, belonged to the ancestors of the Todars.

That these are not relics of the founders of their race is proved by the present people denying all knowledge of the history of the cairns, even by tradition; and by their looking on at their desecration with as much curiosity and indifference to the sacrilege, as is displayed by the antiquarian explorer, whom they have perhaps guided to the spot. In form and countenance the appearance of the Todars is remarkably striking. Tall, well proportioned and athletic, their bold independent carriage, and finely moulded and sinewy limbs attest that they can be sprung from no effeminate eastern race, while their aquiline nose, receding forehead, and rounded profile, combined with their black bushy beards and eyebrows, give them so decidedly Jewish an aspect, that no beholder can fail to be impressed with the idea that they must, in some way, however remote, be connected with one of the lost and wandering tribes of the ancient Israelites. Their dress is as peculiar as their habits and appearance, consisting of one single cloth, a sort of toga, which they wear after a fashion well calculated to set off to advantage their fine muscular form, being disposed about their person like the plaid of a Scottish Highlander. They have no covering for the head of any kind, but never allowing knife or scissors to approach their hair, they suffer it to grow into a mass so thick and bushy, as to form a most effectual protection from the inclemency of the weather. The women are rather fair in complexion, the hue being a dull copper colour in both sexes, and are generally handsome in feature as well as in person, which is tall and well shaped like that of the men, their attire being equally simple and peculiar. The little occupation which the Todars permit themselves to engage in, is solely of a pastoral kind. Considerable herds of buffaloes are attached to each mund, and to milk these, convert their milk into ghee, drive them out to pasture in the morning and home at night, and to keep their huts and the walls of their cattle pens in repair, constitute the sum of their employment, from year to year of their useless existence. Their food consists of curds, milk and ghee mixed with whatever grains they can obtain from the agricultural tribes in the shape of "Goodoo" or tribute for the lands which the latter cultivate, and over which the Todars assert an imaginary proprietary right. I observe that the Honorable Court in their dispatch express a hope "that in

Personal appearance very striking.

Dress peculiar: the toga worn.

Revenue Department. No. 13 of 1843, para 11.

course of time they may be induced so far to change their habits as to bring the lands in the vicinity of their munds into cultivation." I fear as long as this practice of receiving their grain from the Burghers and Kothers remains in force, there is but little chance of this desire being realized, and the only inducement, in my opinion, by which they would ever be brought to condescend to yoke their powerful buffaloes to a plough, and take the handles in their hands, would be that promoted by the stoppage of their supplies by the removal of the "Goodoo" imposition, and their consequent reduction to the primitive state of life, which, by their own account, their forefathers led before the Burghers came to settle on the Hills.

Traditionary history.

Their own idea of their history is that "their ancestors came from no where;" that they were created on these mountains, and that for ages no other living soul approached them: that their dress was of leaves and their food the produce of their cattle and the roots and fruits of the forest. That at length some Kothers found their way to the neighbourhood of their munds and craved permission to cultivate land and build their huts, which was given, on condition of their making offerings to them (the Todars) of a portion of their produce. That soon after this,

Institution of the "Goodoo."

some Burghers or "Buddaghars" came up the Hills and observing the success which had rewarded the adventure of the Kothers, asked permission to settle also and obtained it on condition of the payment of the "goodoo" or tribute of $\frac{1}{6}$th of their entire harvest. More Burghers soon followed the first comers; the amount of the "goodoo" became extensive; the habits of the Todars changed; the cotton embroidered toga took the place of the mantle of leaves, and messes of grains of many descriptions pampered the appetites of beings, who were before as primitive in all things as their native hills. With increase of numbers however the deference of the Burghers for them diminished, and with it the amount of the "goodoo," which received a great acceleration in its decline by the coming of Europeans to the district; when the Burghers observing their indifference to the alleged claims of sovereignty of their hitherto feudal landlords, gradually assumed the position of donors of the "goodoo" of free will, and as a charity; and hence reduced its amount as the circumstances of an abundant or poor harvest, or their own wants and inclinations, directed. Upon this footing, as far as I have

been able to arrive at a right understanding of the question, the "goodoo" appears at present to rest. The Burghers profess not to desire to be relieved from it as a tax, because to give it as a donation to the Todars has become with them a time honored custom, which their prejudices forbid them to break through; but it seems to me evident that they are not disposed to admit the absolute right of the Todars to demand it, and hence their allotment of the quantity of the produce which they are to bestow under the name of "goodoo," according to their means, their own wants, or fancy. Any thing more utterly useless, or unproductive in the social scale, than the life led by the Todars, it is impossible to conceive. Endowed with great physical strength and capacity to endure fatigue and vicissitudes of weather, and hence eminently fitted for a life of agricultural industry or other active employment, this fine race, instead of legitimately developing the powers which have been given to them, devote their lives to the unprofitable end of herding a number of buffaloes, the only use of which is to produce the small quantity of milk required for the use of the few families which congregate together in each mund, and to furnish sacrifices to the manes of any one of their male proprietors who dies.

Unprofitable and idle life led by the Todars.

Their herds are a nuisance and a pest to the district, for being exceedingly wild and ferocious, especially to Europeans, they frequently attack persons travelling on the high roads when not attended (as is generally the case) by a herdsman, and serious accidents occasionally result. Whatever may have been the attributes of the Todars when Europeans first became acquainted with them, they appear at the present time to be decidedly as indolent, mercenary, and sensual as any of the worst tribes in the plains; and but for the meretricious interest which attaches to them through their singular mien, costume and habits of life, and the mystery in which their history is enveloped, they would be deemed a perfect cumbrance to the soil.

Religion, pagan.

Their religion is of course pagan, and engenders the usual superstitions and prejudices. They have no distinct "samee" houses, or places of idol worship, but devote to this purpose the dairy or hut in which they keep their milk, ghee, &c., and in which they offer, by libation, to their deity, such milk as is not consumed in the daily use of the tribe. Their domestic rites are as strange and barbarous, as is all connected with this singular people. The wife of one amongst several brothers is common to the whole circle; and every woman besides her husband

has a certain number of gallants, who reside with her at pleasure and by turns. To such practices as these it is doubtless to be attributed that this race does not increase in numbers, and is evidently deteriorating in physical endowments.

The great mass of the Todas inhabit the vallies and woods to the westward of the plateau, being confined with the exception of five inhabited munds in Parunganaad, and two in Meykenaad, to the division called Todanaad—and it will be seen by the map, that in this portion of the plateau their munds are principally congregated to the westward, apart from the villages of the Burghers, only a few in the neighbourhood of Ootacamund and to the northward being interspersed amongst their cultivated lands.

Desirable if possible to restrict the Todars to the western confines of the Hills.

And to this portion of the Hills, viz. to the extreme westward, it would be highly desirable that the whole tribe should be restricted; as they would have the benefit of abundance of excellent pasture land for their cattle, and being there entirely apart from the other inhabitants of the Hills, would be free to carry on their rites and superstitious observances, without hindrance from others, and without the possibility of causing annoyance to the rest of the population. It has been distinctly stated to me by the Todars, Burghers and the talook Civil authorities, that the Burghers whose villages are situated in Todanaad have to support, by payment of the "goodoo," all the Todars who occupy munds in that division, without aid from the Burghers of the other two naads, who are only bound to maintain the Todars who actually reside within their respective limits. Hence an apparently palpable injustice to the Burghers of Todanaad, since, as will be seen by the census returns, the tribe are pretty equally distributed throughout the three naads; whereas out of a total of 337 souls, of which the tribe of Todars at present consists, only 42 are located in Parunganaad and 10 in Meykenaad, while all the rest, amounting to 285, are located in Todanaad. This seeming difficulty in equalizing the infliction of the "goodoo" impost is overcome in the following manner. As soon as harvest is over, and the "goodoo" collected in Todanaad, the Todar men of that division pay visits to the munds in Meykenaad and Parunganaad, and take up their abode with the women of the community (to the temporary exclusion, as is their custom, of the legitimate husband.) They then pay visits to the surrounding Burgher villages

Levying contributions on the Burghers.

and demand, in their right as temporary husbands of women of the naad, the "goodoo," which, strange to say, is paid; and thus the same man perhaps who has laid a whole village in his own naad under contribution, goes the round of the other two naads appropriating the fruits of the Burghers' labour and industry, and carrying off enough grain to support his whole community in idleness and plenty until the arrival of the next year's harvest time—and to produce by sale in the nearest bazaar, sufficient money to pay the tax or "pillooverry," which is levied yearly on their tribe. I should have refused credence to such a statement had I not received it on the best authority, that of the Tahsildar of the district.

Migrate from mund to mund.

The habits of the Todars are migratory, almost every community or particular group of families consorting together, having two or more munds or villages belonging to them, between which they divide their time according to custom, fancy, the state of the weather, or other circumstances, such as the death of one of their body, upon which occurrence they immediately migrate to another mund. The grass upon which they pasture their buffaloes is of a coarse rank description, fit only for those hardy and powerful animals; but by burning it down, as is their practice, just before the rains set in, when they are about to migrate to another mund, a fine tender young grass, highly nutritious as pasture, has replaced the ashes of the old grass by the time they return to the mund, round which they had run their fires.

Fine breed of buffaloes decreasing.

According to their own statements, the fine breed of buffaloes which seem peculiar to the district is rapidly decreasing, murrain and other diseases having of late years carried them off, in far greater numbers than are bred to supply their places. Doubtless the system of perpetual inbreeding aids in their deterioration. There are some Todar munds on the "Koondah" mountains, but as that range is not in this talook, no information relating to them can be gained until the survey has been extended in that direction. While speaking of the Todar buffaloes, I should mention that a few only of the small calves brought forth by their cows are preserved for perpetuating their stock, and all the rest killed while young, and eaten by the Todars themselves. If these calves were castrated and reared, they would be most admirably suited from their great strength, to drag proper iron ploughs over

Tax paid by the Todars to government.

the steepest and most difficult ground. The Todars pay an annual tax to Government of 9 annas and 5 pice per head on all the female buffaloes herded by them, the bulls being exempt from tax; and, in addition to this, they pay a small assessment on grazing land, called "pillooverry" or grass tax, at the rate of one quarter of the sum fixed as the lowest class assessment for cultivated land per vullum; the quantity of land which they are called upon to pay being estimated according to the number of buffaloes herded at each mund, at the rate of about 10 vullums per 100 head of cattle. The amount of revenue collected from the Todars in 1847 was

| | | | | | |
|---|---|---|---|---|---|
| | on account of tax on | | Buffaloes...... | Rs. | 960 |
| and | do. | do.. | Pillooverry...... | ,, | 400 |
| | | | Total Rupees.. | | 1360 |

The Kothers: 307 Souls.

The Kothers rank next to the Todas, according to common tradition, in seniority, as occupants of the Neilgherries.

They are of low caste, equivalent to that of the Pariah in the plains, and consequently are always found dwelling by themselves in isolated villages, of which there are only six on the plateau of the Hills, and generally called after the race "Kother-gherry." Around each village they have lands, considered and admitted by their Burgher or Todar neighbours to be exclusively their own, no disputes about boundaries, or the right to certain tracts, occurring amongst them at any time, so far as I can learn. The Kothers are an exceedingly industrious and useful race. They give all their time to husbandry when the land calls for their care, but when the seed is in the ground and their time disposeable, they employ it in all sorts of mechanical avocations, repairing the ploughs of their own and the neighbouring villages, as well as bill hooks, mamoties, and all other farming implements, and executing a great variety of smith's and carpenter's work.

It is by these people that the buffalo, and other hides of Hill cattle, which are so much prized by the workers in leather in the plains and which should form a very important item in the export list of the district, are dressed and prepared for the purposes of commerce, the Kothers being very expert curriers.

In common with the Burghers they pay "goodoo" in grain to the Todars of their naad, in acknowledgment of their feudal proprietary

right over the land which they till, and which it appears the Todars, in spite of their own purity, and the uncleanness and low caste of the Kothers, do not hesitate to receive and eat, though no Burgher would touch grain so polluted. The Kothers are not extensive cultivators, bringing only land enough under the plough to yield the quantity of grain required for the use of the village, with a small surplus, which they barter with the low country traders for iron to carry on their forges.

Hence by far the greater part of the land to which they lay claim in the vicinity of their villages remains waste, and is likely to do so, as long as the present proprietary system continues in force. In some parts of the Hills this land is of a very fine description, which, according to their explanation, is to be ascribed to their having come to these Hills the first of all the agricultural tribes, and thus enjoyed the privilege of selecting the best land.

Their religion is of course idolatrous: their marriage customs and ceremonies are not very dissimilar to those observed amongst the people of the Pariah caste in the plains, and they have no plurality of wives, or of husbands. They are impure and dirty in their habits, eating the flesh of cattle which die by the roadside of disease or in the jungle: hence their neighbours the Burghers, though living ostensibly on amicable terms with them, account it pollution to eat with them, or associate with them in their households.

They breed small cows and bullocks, but no buffaloes, and they have a singular and wasteful practice of never drawing the milk from the cow, and allowing the whole to go to the calf which they kill and eat on feast days.

The total number of Kothers on the Neilgherries up to 31st December, 1847, was found to be.... Males, 157, Females, 150 } Total 307 souls, including children of both sexes.

The Burghers.

The Burghers or "Vuddaghurs," signifying literally "people of the North," are supposed to have emigrated to the Neilgherries from the northern part of Mysore or Canara, during a season either of famine or political persecution, and finding their soil and climate good, and their pre-occupiers peaceable and disinclined to molest them, they settled on them; and, meeting with success in their early agricultural operations, they soon induced others of their countrymen to follow them, and thus

formed the nucleus of the numerous tribe now recognized as the chief and most important portion of the Hill population.

Their villages, which have been already described under another head, are scattered all over the plateau of the Hills, excepting the portions to which I have already adverted, as inhabited exclusively by the Todars, viz. the northern and western parts of the "Toda-naad" Division, and the north-eastern angle of the "Parungenaad" called "Kodanaad;" and with the exception of these tracts, a small extent of pasture land in the vicinity of four Todar Munds which occur near Coonoor and Hoolicull, and the lands in the possession of the Kothers, they may be said to arrogate to themselves a right of direct proprietorship over the whole of the lands comprising the Hill plateau. They admit the fact of their holding it under tribute to the Todars, and render to them the "goodoo," or free will offering, in acknowledgment of the feudal position of this tribe; but at the same time they consider the land so far alienated from their possession, that they, its present holders, are empowered to dispose of it to strangers by sale, gift, exchange, or otherwise; which they accordingly do.

They pay the "goodoo" to the Todars resident in their respective "Naads" or Divisions, who according to their statements pay an annual visit, after the harvest is gathered into the various Burgher and Kother villages, and demand the contribution in kind which is rendered according to the circumstances of the inhabitants, the owner of a rich house giving usually 1 cundagum = 20 kollagums; and those less opulent from $\frac{1}{2}$ to $\frac{1}{4}$ cundagum according to their means. Sometimes the offerings of the poorer inhabitants are not considered sufficient, and sometimes they refuse to give any thing at all, when confusion ensues; the Todars, according to statements made to me by some of the Burghers, entering their houses and laying them under contribution by force. If such occurrences really do take place it seems likely that the interference of the civil authorities of the district will, before long, become necessary either to legalize the exaction of the "goodoo" or to put a stop to it; since, as the law seems at present to stand, a Burgher, from whom a Todar might attempt to enforce its payment, would have a clear right to the protection of the police, who would be bound, on an appeal being made, to treat the Todar as a trespasser.

"Goodoo" often extorted by the Todars.

Government interference seems called for.

Such contradictory statements, however, are made by the Burghers, some asserting that they are quite contented to contribute the "goodoo," and have no desire to be relieved from it, while others murmur against its imposition in addition to that of the government assessment, that it is most difficult to discover what their real sentiments upon the subject are—or indeed upon any other in which their interests are, however remotely, concerned.

Transfers of land by the Burghers.

I may remark in connection with the question of the "goodoo" that when the Burghers make transfers of land, within the limits of what they term their territory, to European settlers and others, no stipulation is ever made for a contribution to the Todars, of a portion of whatever produce may be raised by the purchaser; nor do the Todars themselves ever come forward to urge such a claim, or to remonstrate against such alienations of their rights and property.

Many of the Burghers are said to be (for natives) very wealthy, and this circumstance perhaps has induced, amongst many of them, habits of sloth and sensuality inimical to their moral or physical improvement; but nevertheless, when viewed in comparison with other tribes of Hindoos, they cannot be pronounced pre-eminently indolent, or degraded in their habits. They are utterly illiterate, and their ignorance of the accomplishments of reading and writing are transmitted to their children, since schools for their education are unknown amongst them. Their religion is Hindoo, and they are of the Siva sect, their principal deity however being Rungaswamy, whose temple is situated on the summit of "Rungaswamy's Peak," the easternmost point of the Neilgherries, and in addition to whom they also worship many other inferior divinities, male and female.

The Burghers Hindoos of the Siva sect.

There are several subordinate sects amongst the Burghers, the chief of which is that of the "Aroovurs," who assume to be Brahmins, and wear the sacerdotal string over the shoulder; next the Sivacharries, the Wodiars, Kunukars, Burghers and Toriars—the last being the lowest caste amongst the tribe, and generally the poorest. Their ceremonies of marriage and burial do not differ essentially from those observed amongst the Hindoo tribes in the plains, and such differences as exist are only under the first head, and are chiefly remarkable for their indelicacy, and not worthy of notice. The Burghers are a most superstitious timid race,

Very superstitious and timid.

perpetually filled with the dread of evil spirits hovering around them, and ever haunted with fear of the "Coorumburs" (a tribe to be hereafter described), to whose necromancy and demoniac influence they attribute all accidents and infirmities which befall themselves, their families, cattle or crops. To such an extent is this feeling carried, that murders of the most brutal description have been known to be perpetrated upon the unfortunate Corumburs, for which, although in general it is found difficult to obtain evidence to convict the perpetrators, Burghers have been tried and executed, much to their indignation and astonishment; since the principle inculcated amongst them appears to be, that to sacrifice a Coorumbur (and in some cases whole families of them), through whose preternatural agency disease has been brought into a village, or murrain amongst their cattle, is the only way in which the evil can be averted, and the anger of the deity of destruction appeased. Yet notwithstanding this intuitive horror of their influence over the common affairs of their lives, they regard the Coorumburs with the utmost consideration in many other respects, looking upon them as priests, or rather enchanters, whose favor must be propitiated to secure their intercession with the geniuses of good and evil in their favor.

Stand in great awe of the Coorumburs.

For example, in the spring when a field is ready for the seed, the work of husbandry cannot proceed until a Coorumbur has been summoned, a kid sacrificed to a goddess equivalent to Ceres, the soil blessed, and the first handful of seed scattered over it by him. In like manner, a Coorumbur must drive the first plough a few paces, before their work of tillage commences; and at harvest time not a grain or ear is reaped until a small sheaf has been cut by a Coorumbur. For these offices, the Coorumburs receive gifts in money and produce, and finding their interest in the existence of these superstitions, doubtless encourage them by all the means in their power which they can safely employ. The Burghers seem to live in great harmony amongst themselves, ruled by their head men and elders. They are fond and careful of their families, and pay great respect to the aged, but in character they appear deceitful, ungrateful, and false.

Their women and children all labour in the fields at the time of harvest, as well as in preparing the ground for seed; and by this combination of industry it is easy to foresee to what a successful extent their farming operations might be carried, if a better system of husbandry could be introduced amongst them. The total number of

Burghers resident on the Neilgherries in December, 1847, has been found by the census to be as follows :—

| | |
|---|---|
| Males, | 3346 |
| Females, | 3223 |
| Total Souls | 6569 |

including children of both sexes, viz :

| | |
|---|---|
| In Todanaad, | 2039 |
| In Parungenaad, | 2377 |
| In Meykenaad, | 2153 |
| Total | 6569 Souls. |

**The Erulars.** The number of this singular tribe is small, amounting only to

| | |
|---|---|
| Males, | 225 |
| Females, | 236 |
| Total Souls | 461 |

including children of both sexes. They are found principally in the eastern part of the Hills, where they cultivate the lower slopes, forming the broad deep vallies which run in the vicinity of Rungaswamy's Peak towards the plains. They raise crops of raggee, koralley, shamee and mustard seed chiefly, but to no great extent, being very improvident in their arrangements, and eating up all their produce at once, without laying any by for the rainy season, when they subsist chiefly on plantains, jack and other fruits, which they cultivate in patches near their villages, and which thrive in consequence of the lower level on which the Erulars are mostly settled. They also work occasionally as coolies on plantations, preferring employment in the jungle to working in the field, and being expert fellers of trees, hewers of planks, rafters, &c. They worship Rungaswamy and some other inferior deities, and enjoy the high privilege of tending the temple and idol on "Rungaswamy's Peak," where two or more of their number officiate as priests at the period of the great festival in August and September, when thousands of Hindoo pilgrims flock to the sacred Peak from all parts of the adjacent country with offerings of all descriptions of produce, and occasionally money. They pay kist to Government according to the nature and quantity of their crops ;

Are Priests of Rungaswamy's temple on the Peak.

but they make no offerings to the Todars in the shape of "goodoo," probably from their occupying land rather below the plateau to which the Todars lay claim. When driven to extremities for food the Erulars betake themselves to the jungles on the slopes of the hills, and, seeming to have no fear for wild beasts, hunt and destroy sambre, spotted deer, jungle sheep, and other game, with great expertness. They also search for bees wax, which finds a ready sale in the plains. But many lose their lives in this pursuit, through the bears which are numerous in the eastern part of the Hills, and whose fondness for honey often brings them into contact with the collectors of wax.

The Coorumburs.

The Coorumburs are not, strictly speaking, a tribe of mountaineers, since many sects of the same people are found in various parts of the plains, especially towards the southward, and those who do frequent the Neilgherries inhabit the lowest slopes, and are perpetually migrating from spot to spot, erecting their little huts usually on grassy patches, in the midst of the densest and most wild forests. Those who are met with on the eastern side of the Hills are called "Mooloo-Coorumburs" implying "thorny" or jungle Coorumburs, to distinguish them in some degree from the Coorumburs of the west country.

They are small in stature, and their squalid and uncouth appearance and wild matted hair might seem to give some cause, with so timid a race as the Burghers, for imputing to them the fiendish and preternatural powers with which their superstition invests them. If a Burgher meets a Coorumbur, not summoned at seed or harvest time, in his path, he will fly from him as from a wild beast; and if too close to escape his dreaded glance, he will return home and resign himself to a fate which he deems inevitable; often in fact inducing sickness by the prostration of body and mind which is thus supervened. I may here mention that a popular belief exists that the Coorumburs have an equal proprietary right in the soil of the Neilgherries, having come to them at a period coeval with, or antecedent to, the migration to them of the Todars. The Coorumburs cultivate some land on the lower slopes of the Hills and raise small crops of dry grain, but they depend for their supplies chiefly on the fees in kind which they receive from the Burghers, for the offices performed by them in consecrating their crops and seed, as has been already described in treating of the Burghers. Those however who are met with in the forests on the western slopes of the Neilgherries are more industrious, employing themselves chiefly

in felling timber for the sawyers and contractors, in making baskets, and, to a small extent, in cultivation.

These Coorumburs appear for the most part to come from Malayalum, where they exist in a state of slavery to opulent natives, who claim their persons as their property—a claim, however, not much regarded. The Coorumburs, from their almost always residing amongst the forests, have a considerable acquaintance with the properties of medicinal herbs, gums, and roots, and hence often effect cures of simple diseases amongst the Burghers and others, when called in to disenchant a member of a family supposed to be bewitched. This success is, of course, attributed to preternatural agency, and a failure in their mode of treatment of a disease is usually set down to its baneful exercise, a result which often leads the officiating Coorumbur into trouble. As has been already remarked, it has been found impossible to obtain any return of the number of this tribe, but it must be very inconsiderable.

Employment.

In the preceding description of the different tribes inhabiting the Neilgherries, their habits have been sufficiently set forth to explain the nature of the employment or occupation which each pursues. Following, however, the argument of this synopsis, it may be necessary under this head briefly to recapitulate them.

The Todars.

Their occupation is purely pastoral; their only manual labour being the milking of their buffaloes, and converting portions of their milk into butter and ghee. They let their herds loose during the day to wander about, almost always unattended by a herdsman, to the annoyance of travellers on the public roads; and, but for the caution observed in approaching these animals, to their great danger.

The life they lead is eminently a most idle and useless one, involving the performance of no offices, and the undertaking of no duties, which tend in any way to the benefit of the community at large. Especially marked by nature as a race upon whom labour, demanding great physical exertion and bodily prowess, should devolve, they are found abjuring the performance of manual labour of any kind, subsisting upon the hard won earnings of others, and acting no part in the great work of social duty and improvement, which society demands that all its members should co-operate to advance.

The Kothers. Their occupation is both agricultural and mechanical.

They are tolerably good workers in iron and execute carpenters' work in a rough way. They tan ox and buffalo hides, and make baskets, and their women manufacture the only earthen pots, or chatties, produced on the Hills.

The Burghers. Their occupation is solely agricultural, and their numbers having of late considerably increased, there is always a superabundance of hands available for employment as carrying coolies and out of doors labourers, when their own crops are either in the ground, or reaped and stored, which constitutes them the most really useful tribe on the Hills.

The Erulars and Coorumburs. Their employment is agricultural, and also, in a measure, vagrant; since, lacking sufficient energy or industry to draw from the soil the utmost of its productive powers, they subsist, between harvest and harvest, upon whatever they can extract from the natural resources of the forests through which they wander.

Languages. The Neilgherries being situated within the limits of the Coimbatore district, Tamil is the language employed in the public departments and in the bazaars and other resorts of the natives from the low country; but amongst all the Hill tribes Canarese is the colloquial. The Todars have a language peculiar to themselves, but they communicate with the Burgher and other tribes in Canarese. The Todar language has a singular accent, and a quaint original style, and seems to bear no analogy whatever to that spoken by any other race of natives in southern India. The Coorumburs have also a peculiar dialect of their own, but it seems to be based on the Canarese.

Condition. Under this head a very favorable report may be made, as, with the exception of the two inferior tribes, the Erulars and Coorumburs, who, from their improvident and vagrant mode of life, are often in a state of great destitution, all the Hill tribes live in comparative comfort and affluence. This is as to their physical condition ; but in regard to their moral state the aspect is not so favorable. The accomplishments of reading and writing seem almost entirely unknown amongst them, while their morals are tainted by the arts of dissimulation, cunning, and falsehood, which seem to be instilled into their minds at an early age.

Superstitious to a degree almost incredible, and prejudiced against all innovation and improvement, I fear they offer but a barren field to the German missionaries who have established themselves on the Neilgherries to labour amongst the Hill tribes; and who are endeavouring to form village schools, in the hope of inducing parents to send their children to them for instruction in their own tongue.

Health and Diseases.

Upon this point it is not easy to obtain correct information, as all the natives have an insurmountable aversion to entering a hospital; and though they value and respect the opinion of a medical officer, they are not found to come voluntarily forward to seek assistance and advice. From observation in their villages, and of the coolies and others who come to the houses of European residents for employment, we are led to conclude that all classes of natives located on these Hills, whether of high or low caste, aborigines or modern settlers, enjoy the most robust health, showing that the pure atmosphere and invigorating climate have the same genial effect upon the Native, as upon the European frame and constitution. The most prevalent diseases amongst the Burghers, who may be considered the mass of the Hill population, are small pox, occasionally fever, and an affection of the eyes resembling ophthalmia. The first of these is however the only one which can be called common amongst them, and is the greatest scourge by which they are visited; and as vaccination is not practised, the disease often commits fearful ravages in their villages, carrying off whole families in a brief space of time. There is no doubt that the mountaineers would willingly take advantage of the existence of a Vaccine Depôt, if one were to be established on these Hills; and as the disease certainly seems local, and peculiarly virulent on them, and as it is totally impossible for the two medical officers stationed in Ootacamund, to quit the scene of their constant and extensive duty amongst the sick officers and their families resident there, to introduce and practise vaccination in the Burgher districts, it would be a great blessing to the district if such an institution could be formed in it, and be the means unquestionably of saving many lives.

Small Pox, a prevalent disease.

Health and diseases of Troops, with the presumed causes of healthy or diseased state, and the treatment, (not strictly medical) found to be useful.

The impending measure for the location of European troops on these Hills will, it is to be hoped, before long, furnish striking and favorable evidence upon this subject. At present it can only be inferred that the beneficial and renovating effect,

which even a few months' residence on them produces on the enfeebled constitutions of officers, must in an equal degree be exerted on the condition of the private soldiers who may be sent to them; and that not only physically, but morally; since the constant out of doors employment and recreation which they would be enabled, during the greater portion of the year, to find and enjoy, would remove them from the influence of that most demoralizing of all agencies, the dull, monotonous irksomeness of the almost constant confinement to barracks, and of the life of utter idleness which they are compelled to in the plains. To the unfortunate wives and children of the European soldiery the effects of this wise measure will produce incalculable benefit, for it needs only to consult the tables of mortality in the records of almost any European regiment serving in the plains, to perceive, that upon them, and the latter especially, the hardships and sufferings of a barrack life there fall with aggravated cruelty. Under the discipline of a good school, and with constant employment found for them, relieved by the healthful exercise which will always be within their reach, it is not too much to say, that hundreds of lives may be annually saved, many too, possibly to be devoted to the service of the state, in the persons of useful and well educated servants. I think that on the first arrival of fresh troops on the Hills, much care and attention will be necessary to adapt the habits of the men to the entirely new climate (comparatively speaking) in which they will find themselves, avoiding very early and very late parades, and making all guards and sentries put on great-coats before sunset, and wear them till after sunrise, and generally keeping the men out of the influence of the night air as much as possible. The site which I have had occasion to recommend for the new cantonment, in the valley of Jakatulla, is situated at an elevation of 6,100 feet above the sea, and enjoys a most temperate and agreeable climate; but the rapid change of temperature which follows the withdrawal of the sun's rays there as in all other parts of the Hills, demands care and precaution, especially in the case of men whose constitutions, and liver especially, have become injured by long residence in the low country.

Men suffering from dysentery will, with care, do well in Jakatulla, at all events in the dry weather, if too much exposure to the sun and to the dry easterly winds is avoided. Indeed there appear to be few diseases contracted in the plains which are not, unless too far advanced, speedily cured here—speaking of the Hills generally—with the exception of liver complaint, which if abscess has already formed, usu-

ally assumes a more aggravated form through the cessation of the action of the skin, after a short residence, and compels the patient to proceed to sea as the only alternative.

Education and mode of pursuing it.

Amongst the Hill tribes it may be said that there is no education whatever. The German missionaries, referred to in a preceding section, are now endeavouring to establish schools amongst the Burghers, and to prevail upon the parents to send their children to them, but I believe with very indifferent success. They have so little ambition or desire to see their children rise beyond the position in which they are born, that reading and writing are looked upon as very unnecessary accomplishments; and as an illustration of this I may mention that a philanthropical gentleman who has settled on these Hills, and who devotes much of his time to the task of attempting the moral regeneration of the Burghers, is only able to draw children to a school which he has established, by the payment of 1 anna daily to each! The Kothers, Erulars and Coorumburs are all equally degraded in regard to education, or to the desire to acquire it, and with the Todars it is, of course, quite out of the question.

Amongst the native settlers from the plains the case is very different; in the settlement of Ootacamund there are five native schools, which are attended by many of the children whose parents can afford the small fee payable to the schoolmaster.

The instruction imparted in these schools is, of course, confined to reading, writing, and a sort of arithmetic.

European Schools.

There is also a very good school conducted by an European, for the education of the sons of Europeans and East Indians, which is supported by voluntary contributions; and is under the general superintendence of the chaplain of the station for the time being. It is situated in Ootacamund, where also two seminaries have been recently established for the children of the better class, one for boys and one for girls, both of which, I believe, are well supported, and prove of great advantage to officers and others, whose means will not admit of their sending their offspring to England, when they have attained the age beyond which it is considered unsafe to keep them in the plains.

Proposed Proprietary School.

It has been in contemplation to establish a proprietary school upon a large scale on these Hills, with a view to rendering the expense to

parents as small as possible, while, at the same time, the best system of education should be adopted in the establishment; but, owing to pecuniary difficulties, this excellent scheme remains for the present in abeyance.

Charitable Institutions.

Excepting the Government hospital and the dispensary, there is no charitable institution, properly so called, on the Hills. There is an association amongst the European residents of the cantonment, for granting out-door relief to aged and indigent poor, who attend daily at the door of the church to receive it in the form of food, money, or clothing; but there is no establishment into which paupers are received and sheltered. The public choultry or caravanserai is intended more for the accommodation of travellers and market men from below, than for a refuge for the sick and poor.

The hospital is in charge of the senior medical officer, but, owing to the prejudice which exists amongst the natives against such an institution, a patient is very seldom received within its walls.

State of litigation and of crime.

The most fruitful sources of litigation are disputes about boundaries of land, trespassing of cattle, and adverse claims to the right of water from particular channels.

These, especially in the cantonment, run very high at times; but it is to be hoped that the permanent fixing of all boundaries by means of the present survey, will put an end to these difficulties in a great measure.

Crime is certainly not common on these Hills; as beyond cases of petty theft, and these for the most part confined to the cantonment, the general criminal calendar is a very light one. Murders have been committed, and possibly are so still, at rare intervals, upon the persons of unfortunate Coorumburs, accused of witchcraft, both by Burghers and Todars; but as such deeds are generally massacres perpetrated by a whole village, it has frequently been found impossible to trace the actual murderers. Upon the whole it must be admitted, that in spite of their proneness to lying and dissimulation, all the tribes inhabiting these Hills are free from the stain of serious crimes. Drunkenness and violence are unknown amongst them, and in this respect they offer a striking contrast to the other native residents, who, both Malabars, Mysorians, and other emigrants from the

plains are much addicted to spirits, which are unfortunately to be obtained readily, and at a very low rate.

With regard to the cantonment of Ootacamund, when the peculiar nature of its native population is considered, consisting as it does of petty traders, Brinjarries, Lubbies, and servants of all castes, and from every part almost of India, combined with the means which all classes possess of obtaining arrack, and also opium, it must be esteemed very creditable to the authorities that so little crime is committed within its precincts.

That such should be the case is doubtless chiefly to be attributed to the constant presence of a magistrate (who is also commanding officer of the district) aided by a tahsildar and cutwall resident on the spot, around which the bazaars and abodes of the native inhabitants are drawn so closely, and so little scattered, as to bring them all readily within the range of a close surveillance.

Police; number, remuneration and efficiency.

| *Pay.* | The Police of the Neilgherries consists of |
| --- | --- |
| Rs. 400 per mensem. | The Joint Magistrate. |
| „ 50 „ „ | The Tahsildar, who is also "Head of Police." |
| „ 42 „ „ | The Cutwall, whose duties are confined to Ootacamund. |
| „ 17 „ „ | The Peishcar, or Tahsildar's deputy, who has charge of the eastern portion of the Hills. |
| „ 10½ (Cutwall's and | |
| „ 7 Sebundy) | 5 Duffadars, and |
| 5 ; 4 : and 3½ „ | 75 Peons. |

But of these two last, 3 duffadars and 43 peons belong to the sebundy establishment, and are employed at the proper season in collecting the revenue. Six peons also are exclusively employed in the charge of the forests which are scattered about the environs of the cantonment, to prevent wood-cutters from wantonly destroying them, or cutting in parts where they are prohibited from felling trees. Besides these, 2 duffadars and 20 peons, under the immediate orders of the cutwall, remain in Ootacamund to carry on the police duties of the bazaars.

The orderly state of the chief settlement, Ootacamund, sufficiently attests the efficiency of the cantonment police, as does also the com-

parative absence of crime in the hill district generally, that of the Sebundy or rural police.

Manufactures.

There are no manufactures carried on on the Neilgherries, unless a few earthen pots made by the Kothers, and principally at a village near Soloor, to the westward of Mootenaad, may be called by that name. From the great command however of water power all over the Hills, and especially near the summits of the passes or ghauts, many of the products of the plains requiring to be wrought by heavy or steadily driven machinery, such as cotton for yarn, oil seeds, &c., might, no doubt, be profitably converted from the raw state on the Neilgherries, or on their lower slopes. The wheat raised on them might also be ground into flour by machinery turned by water, very economically; and it seems strange that at the present time, although a large quantity of flour is consumed in the settlements, and considering how many Europeans who must have some knowledge of ordinary machinery are resident on the Hills, not one flour mill is in existence, all the wheat being ground by manual labour in the common ancient native mill of two circular stones, the lower fixed and the upper one revolving.

Capital employed.

No capital to any extent is invested at the present time except in mulberry and coffee plantations, the amount of which I have no means of ascertaining, and in house building in the cantonment, which is not considerable. The return on the latter investment appears to be about 15 per cent.

Imports.

The following articles are imported into the Hill district from the adjacent provinces of Malabar, Mysore, and Coimbatore:

| | | | |
|---|---|---|---|
| Sugar, | Turmeric, | Oils, | Arrack, |
| Salt-fish, | Cocoanuts, | Almonds, | Dried Fruits, |
| Sheep, | Bullocks, | Poultry, | Gunpowder, |
| Sulphur, | Lime, | Furniture, | Artificer's Tools, |
| Gram, | Raggee, | Chollum, | Betel Nut, |
| Ghee, | Spices, | Limes, | Native Peas, |
| Cotton Cloth, | Salt, | Tobacco, | |

and of European articles: wines and spirits, wearing apparel, cambrics, woollens, flannels, muslins, shoes, books and stationery, earthenware and glass, hardware, groceries, beer and porter, candles, and all kinds of supplies for the table.

To this list, strange to say, is to be added wheat, which is imported to some extent from Mysore, where it is cultivated on the higher steppes of the table land. The bakers buy it because it is cheaper than the Hill wheat, although not nearly so good, and mixing it with the corn purchased from the Burghers, turn it to profitable account. There is generally a difference of 3 to 4 seers per rupee in the prices of the Mysore and of the Hill wheat, in favor of the former, in spite of the extra cost of transit to the cantonment market up the Seegoor ghaut, a circumstance which tends to support the idea of the misappropriation and mismanagement of this district through the ignorance and apathy of the Hill cultivators.

Exports. The exported articles are coffee, silk, potatoes, barley, hides, opium, wax, dammer or resin, and wheat, which being bartered by the Burghers for low country necessaries with the itinerant traders, thus becomes an article both of import and export.

No statement can be furnished of the quantities of the above mentioned goods which are imported or exported, since in consequence of the transit duties having been abolished, they pass through no office in which their amount might be registered.

Exchange. Money is readily obtainable for bills on Bombay or Madras from the native merchants, who, having disposed of their goods on the Hills, are anxious to remit the proceeds for re-investment. Hence cash on such bills is generally obtained at par, or at the utmost at 1 per cent. discount. No other exchange operations are carried on in the settlement, all business with England being transacted through agents at Madras or Bombay.

Weights. The weights in use in the bazaars of the three settlements are: The maund of 25 lbs. avoirdupois.
,, viss ,, 2 ,, ,,
,, pound of 40 Rs. or tolas weight.
,, seer ,, 25 ,, ,, ,,

The Burghers sell all their produce by measure, excepting opium, which they rate at so much per seer of 24 rupees weight, being one rupee under the seer of the bazaars.

Measures. The bazaar measures are the seer, ½ seer, and ¼ seer, in use all over the country. The Bur-

ghers sell their grain by the "kolagum" the contents of which when heaped up is about 226 cubic inches, or somewhat more than 2 seers.

Coins.

The coins issued from the Honorable Company's mint are the only monies in circulation on the Hills, viz., rupees, half and quarter rupees, 2 annas, quarter and half annas, and pice.

It is supposed that a good deal of coin goes out of circulation in the district, owing to the Burghers and others either hoarding it by burying, or getting it converted into ornaments.

Banking operations.

A bank was recently established in Ootacamund, but it failed in consequence, I believe, of the ignorance and want of standing of the managers. But considering that there is almost always a large community of Europeans, chiefly in the service of Government, congregated at the station, together with a not inconsiderable number of native traders possessed of capital, it seems obvious that if conducted upon proper principles, and by parties of mercantile respectability and intelligence, such an establishment could not fail to prosper, and to prove a source of great convenience and benefit to the public.

Lending and Borrowing.

Money is lent in the bazaar amongst the natives at the usual usurious rate of interest: 2 per cent. being given for loans with security of jewels or other convertible property, per month, and 3 per cent. per month for money lent on personal security only.

Modes of transit and communication.

The Neilgherry district communicates with the neighbouring provinces by means of six passes or ghauts, the roads in which have been cut and kept in repair at the public expense, with the exception of one, the "Manaar" or "Soondaputty" ghaut which has gone out of general use. The only one of these passes which is ascended by wheeled conveyances is the "Seegoor;" the mode of transit on all the others being by bullocks, coolies, and, to a small extent, by asses. By the "Seegoor" ghaut however, cart loads of 1,000 lbs. weight, or 2 candies, are brought up, an additional pair of bullocks being required to help the cart over the steepest parts of the ascent.

The Goodaloor Pass.

Commencing at the N. W. angle of the plateau the first pass which presents itself is that

leading from Neddiwuttum to Goodaloor forming the communication between the Hills and Cannanore, Tellicherry and the western coast towards Bombay through the Wynaad country, and also with Calicut by the most direct road which exists to that city; descending the Carcoor pass, and passing through Nellumboor parallel to the Beypoor river to the coast. The "Koondah Ghaut," having however obtained a preference over this line for the journey to Calicut, the tappal runners have lately been taken off it and posted along the other; in consequence of which the ferries, by which several large streams are crossed, are not now regularly attended, and, through the absence of a constant and sustained traffic along the line, the jungle is encroaching and becoming rank and dangerous, both from malaria and beasts of prey. The public bungalows also along this line are badly situated as regards health; but this I understand will before long be obviated by the erection of a new one in an open space clear of the encroachments of the jungle, and free from fever. It is much to be regretted that this road should be allowed to fall into disuse as the line is a most convenient one for reaching the Hills from the coast by Calicut where all invalids from Bombay now land; and as the ghaut, being a short one of only 5½ miles, and on a very good trace, can be easily and economically kept in repair.

The Rajah of Nellumboor is, I believe, bound to keep up the ferries between the town of that name, and the foot of the Carcoor pass, so that the expense of keeping this line of road open would fall very lightly upon Government. The road on from Neddiwuttum into Ootacamund is an excellent one, and has been recently repaired throughout, so as to be perfectly practicable for laden carts. The ghaut is also in good order and a laden bandy can descend it with safety; but the ascent is impracticable in consequence of some very steep acclivities upon which the road is carried. The Pykara or Moyaar river forming the boundary between the districts of Malabar and Coimbatore, the road from thence to the westward is under the collector of the former province, by whom the greatest attention appears to be given to it.

The Seegoor Pass.

This ghaut which is the most frequented of all, in consequence of its being practicable for laden carts and other wheeled conveyances, is carried down the northern face of the Hills, commencing the descent near Mootenaad, and ending it near the village of "Seegoor." By this pass the communica-

tion is kept up with Bangalore, Madras and all places to the northward, and the chief bulk of European supplies, heavy baggage, horse gram, rice, &c., comes to the settlement by it. It also affords the means of transit for the teak timber used on the Hills in the form of rafters, planks, &c., the road passing near the forests where teak trees are cut under sanction of Government, about Tippacadoo and Musneumcoil. The trees are felled by Coorumburs and others, and are then, after being lopped and roughly dressed, dragged on rude bandies by buffaloes to the road side, where they are sawn into building pieces, and sent on bullock bandies to the Ootacamund market by the Seegoor Ghaut.

The Kotergherry Pass. In the north-east angle of the plateau of the Hills, at Kotergherry is another ghaut communicating with Matepolliem in the low country, and thence to Coimbatore and the Salem road.

This is the oldest road cut for the ascent of the Neilgherries at the expense of Government, and it led formerly to the original sanitarium at Dimhutty. It has been constructed in a very sound and substantial manner originally, but having been neglected and suffered to fall into very bad order, it was found necessary last year to give it extensive repair throughout, owing to which it is now in a very practicable state, though too steep for wheeled carriages.

This, and all the other ghauts, could be kept in repair at a very trifling expense, if some person were entertained, whose duty it should be to go down the entire line once a month with coolies, to see that no drains or channels had got choked; for the interruption of one of these outlets for the heavy falls of rain which now and then occur, and which might, if remedied in time, be done by one man in an hour often causes breaches in the road which it takes twenty or thirty men to repair. This ghaut is of considerable importance to the eastern, part of the Hills, as a great deal of traffic in the produce of the coffee plantations and of the Burghers' lands goes on by it; and large quantities of low country goods are brought up it for sale and barter. It is also favorably situated for gaining the summit of the Hills on the eastern side, as the ascent of a long spur on which the lower part of the road is carried, is commenced almost immediately after quitting Matepolliem, without having to pass through much low jungle.

Troops therefore marching to the Hill cantonment could, by leaving their camp at Matepolliem at daybreak, ascend into a cool climate before the sun was high enough to distress them.

The Coonoor Ghaut. The Coonoor ghaut on the other hand, which is the next to the eastward, does not commence its ascent until after 7 miles of bad jungle have been passed through after leaving Matepolliem. It is however the most frequented by travellers in palanquins and on horseback, as the road on from the summit at the settlement of Coonoor leads more direct from Ootacamund than that from Kotergherry, besides having the advantage of a public bungalow conveniently situated near Coonoor, while at Kotergherry there is none. The Coonoor ghaut has been very well constructed, especially the lower half of it, which could be ascended by laden carts having an extra pair of bullocks. The upper part has not been so well traced, the gradients being less favorable, and irregularly arranged. There is an immense traffic on this ghaut entirely by bullocks, which ascend it by thousands on the Ootacamund market day, and indeed almost daily, laden with every description of low country produce and other supplies. Travellers from Madras and the South almost invariably come by this road as the journey from the east coast by Salem is both the most easy, and occupies less time than by Bangalore and Seegoor.

The Mailoor Ghaut. The Mailoor or Soondaputty ghaut appears in former years to have been much frequented, by travellers journeying from the eastern parts of the presidency by Coimbatore to the Hills, from which town there was a road to Soondaputty, a village at the foot of the southern part of the Neilgherries, though what the direction of it was I am unable to say, as the country between Coimbatore and that part of the base of the Hills appears never to have been surveyed, and is left blank in the Atlas of India. This ghaut which gains the summit of the Hills near "Shoondabetta" is only now used by smugglers and by the Burghers who cultivate land about Mailoor and Keel Koondah, to carry down their produce for barter for clothes, tobacco, salt, &c. The remains of a very good road still exist from the top of this ghaut all the way to Ootacamund, but it has become impassable in many places, owing to bogs having formed in the hollows and closed over it.

The Sispara or Koondah Ghaut. This magnificent ghaut forms the line of communication between the western coast (Calicut) and the Neilgherries, across the "Koondah" mountains. Viewing this latter tract as one likely to become, before long, of the greatest value and importance as a producing country, I should describe the

Sispara pass as one to which attention should be particularly drawn. Since however the survey of the "Koondahs" has not yet been executed, it will be proper to defer a description of it and of the public buildings and bridges which have been lately erected along the line of road by which Ootacamund is approached from its summit, until it can be introduced into the "Memoir" prepared to accompany the map of that part of the Hill district, together with a table of roads and distances from the nearest halting places in the plains at the foot of the respective ghauts.

Communication by water.

None, internal, or, naturally, with any other district.

Impediments and their duration.

Impediments very rarely occur on any of the lines of communication to the Hills. Sometimes in seasons of long continued rain masses of overhanging rock, getting loosened by the washing away of the soil beneath, fall upon the road and cause some inconvenience, but never to the extent of suspending the traffic upon any of the ghauts. The most serious impediments have been occasioned by the washing away of the bridges near the foot of the passes, as at Tippacadoo near Seegoor, and Matepolliem, during the past year. But a temporary remedy being at hand, only a brief suspension took place in the transit of goods along those lines of road. Along the lines of road on the plateau diverging from Ootacamund to the summits of the various passes, impediments more frequently occur, owing to the perishable nature of the timber with which small bridges are constructed to carry the road over channels, and to the sinking of the rough stone causeways laid across swamps. By degrees however a better system is being introduced, and more permanent works are now taking the place of these temporary and inefficient structures. It is unwise, and I think bad economy, to construct any road bridges on these Hills of jungle wood, unless it has been cut long before it is required for use, and thoroughly seasoned, as the alternations of heat and cold are so very extreme, and the changes of weather from dryness to moisture so continuous, that the fibres of unseasoned wood soon yield to their influence. Only teak beams should be used, unless jungle wood can be cut and kept to season for use in convenient situations, or unless a brick arch is not considered expedient.

Fords.

Fords are numerous on the Hills, but are all insignificant, as being merely the crossings of

small streams, except near Pykara where there is a good ford across the Moyaar, over a dyke of trap rock which runs at right angles to the course of the stream.

Ferries. The only ferry on the Hills is that near the public bungalow at Pykara, for carrying the road to Neddiwuttum across the Moyaar. It is used by travellers in palanquins and on horseback, as also by carts; but the ford, which is close by, affords the readiest means of crossing to foot passengers. The ferry boat which consists of a platform laid on two canoes or barges, and is moved by hauling on a cable of twisted rattan stretched from bank to bank, is the property of Government, and two ferry men to work it are maintained at the public expense, receiving 6 rupees each per mensem. No toll is levied on passengers making use of it.

Bridges. There is a substantial brick bridge at Coonoor crossing the great stream which descends the pass at that place; another on the Neddiwuttum road about half way between Ootacamund and Pykara; one at Ootacamund connecting the extremities of embankments run out from bank to bank of the lake to form a road across it; and another at the entrance of the cantonment by the Coonoor road over the stream which feeds the lake. These bridges are all single arched, but the span is inconsiderable, and they are not worthy of more particular description. Two large and substantial timber bridges have been recently constructed on the Koondah road, one over the principal feeder of the Bowany (called by the Burghers the "Porthy" or "Porutty" river) and the other at the entrance of the "long valley" on the Koondahs, which, together with the bridges which occur along the Sispara pass, will be described in the Koondah memoir.

There are innumerable small jungle wood bridges upon all the lines of road over petty streams and nullahs, which do not demand particular description.

Revenue derived from Post Office, Rupees 13,000. The net revenue of the post office for the year ending 31st December, 1847, after deducting abstracts for the year amounted to rupees 12,953-12-5.

Taxation. In addition to the land tax or assessment already fully described in the Table at page 26, the quit rent on lands held by Europeans, and the tax on the Todars, buffaloes, described at page 56, may be enumerated the excise or tax on arrack, sold on the Hills, which is collected by farming out the

monopoly of the right of selling the spirit, as is customary in all districts under this presidency; and the "Koopoovery" a municipal tax levied by the cutwal on all householders in the bazaars of the cantonment for the maintenance of a department of scavengers, &c., for keeping the streets clean. The following is a statement showing the gross amount of revenue derived from each source referred to in the Memoir, in 1847, viz.—*For the Coimbatore Talook of the Neilgherries.*

| | | | |
|---|---|---|---|
| Sources of Revenue and produce of each tax. | Fusly 1256 or A. D. 1846--7. | Assessment in lands from Burghers, &c. including Todar's buffalo tax and Pullooverry, and quit rent on lands of Europeans ............Rs. | 7,820 |
| | | Arrack contract, sold for.......... ,, | 16,300 |
| | | Koopooverry or scavengers' tax surplus after expenses............ ,, | 300 |
| | | Rent of a shop in the bazaar belonging to Government............ ,, | 24 |
| | | Fines levied in the Police Court.... ,, | 875 |
| | | Stamped paper and transfers...... ,, | 126 |
| | | Post Office revenue.............. ,, | 12,953 |
| | | District postage realized......... ,, | 164 |
| | | For the Coimbatore portion—Total Revenue..Rs. | 38,562* |

The revenue derived from the Malabar, or Western portion of the Neilgherries amounted to about 700 Rupees.†

Total expenditure on account of charges, per mensem.. Rs. 2,089-4

Mode of collection. The land tax or assessment on cultivated lands is collected by the tahsildar and peishcar who make a progress through their respective divisions, accompanied by the ghomastahs and sebundy peons, and collect it according to the rate fixed by the ghomastahs on inspection of the state of the crops on the land. The excise duty on arrack is collected by a sale of the privilege to one individual, from whom the amount is received without further trouble to the government functionaries. The quit rent is collected upon bills sent to each landholder signed by the collector, and the amount received by the ghomastahs who attend with the document. The "Koopooverry" is collected by the cutwall as already stated. All fines levied for misdemeanor in the tahsildar's or ma-

* Vide appendix A.

† The amount in 1243 Fusly or A. D. 1843-4 was Rs. 649-3-2.

gistrate's court, are paid into the talook treasury. The receipts of the post office, after deducting the amount of the monthly abstract for the pay of the office establishment, are paid into the talook treasury.

The district postage is received from parties sending letters to Seegoor and other places in the talook, to which no regular mail is sent from the post office.

The Principal Collector visits the district once a year on "Jummabundy," when the revenue accounts are settled for the past year, and all complaints of over assessment examined into and adjudicated.

Number in Sebundy or other Corps engaged in collecting Revenue.

The total number of peons employed in the collection of the revenue is 43, with 3 duffadars and 3 ghomastahs; the peons and duffadars are also available for general police duties under the orders of the tahsildar, who, next to the Joint Magistrate, is the head police officer of the Hill district.

History: and Antiquities.

The utmost obscurity hangs over the early history of the Neilgherry Hills, for beyond the period of the immigration of the "Todars" or "Todawars," tradition amongst the present inhabitants, affords no clue whatever to trace it. That they have been in former ages inhabited, and that by a very peculiar race, evidence sufficient to show is furnished by the existence of the numerous "cairns," or rude tombs found upon the summits of almost all the loftier mountains in every part of the Hills, the origin of which is so remote, that the Todars, recognized as the most ancient inhabitants, have no tradition amongst themselves bequeathed by their ancestors, which even guides us to a surmise, as to the race of people by whom they were constructed. As affording thus almost the only land marks, by which speculation as to the ancient state of this remarkable region can be guided, these "cairns" seem to merit a brief description. They are invariably situated, as has been already mentioned, on the highest summits of the Hills, sometimes single, but more frequently in groups or rows of from 3 to 6. They are circular in form, raised with large unhewn blocks of stone 4 feet or more above the level of the ground, and varying in diameter from 12 or 15 feet to 25 or 30. The interior is hollowed out to some depth below the original surface, usually until the solid rock is reached, and the space thus cleared filled with earthen pots, with the covers strongly luted on, pieces of bone, charcoal, and fragments of pottery, all tightly packed in a soil so black and finely pulverized, as to give cause to suppose it to be de-

Cairns.

composed animal matter. On breaking these pots or urns, which many of them are in the form of, they are found to contain ashes, charcoal, and pieces of half calcined bones; with sometimes a small quantity of a pure scentless fluid, which in two instances I found to be pure water slightly impregnated with lime. Images of tigers, elks, bisons, leopards and some domestic animals, pieces of half decomposed bronze resembling spear heads, tripods, &c., are also found occasionally, mixed with the other remains; but it is a singular fact that on breaking up the strong pavement of slabs of stone, with which the cairns are covered in, and mining down until a second pavement is come upon, which, from its tightness and weight has, to all appearance, never been disturbed since it was first laid, we find on removing it that the contents of the vault below, instead of being laid in the order befitting the repose of consecrated ashes, are generally smashed and broken up and mixed with the soil, leaving barely one or two pots of bones and ashes entire, just as though the pickaxe of the destroying explorer had been already there. Some ingenious writers have endeavoured to build up upon the evidence of these cairns a theory, to the effect that their constructors must have been a tribe of the ancient Scythians, who having wandered into this remote part of Asia, preferred a settlement on the Hills they had discovered, to the hopeless undertaking of a return; and pursuing their hypothesis, and discovering instances in the customs and habits of the present Todars, which assimilate them to the race which history describes under the name of Scythians, they pass on to the conclusion that their ancestors were the founders of these tombs, and the descendants of the ancient Scythians. But this assumption is in my opinion erroneous. So prejudiced and bigoted a race as the Todars would naturally cherish with the utmost veneration and solicitude any vestiges of mortality, which their most vague tradition should point to as monuments of their ancestors; and therefore when we find them offering not the slightest objection to the cairns being broken open and their contents rifled, and even voluntarily guiding strangers to unexplored ones, aiding them in the work of destruction, it is reasonable to conclude that they form no link of communication between the present race of Todars, and any tribe of people by whom these singular monuments may have been raised.

Todars believed by some to be descendants of the ancient Scythians.

Cairns afford no clue to the History of the Todars.

All clue being thus lost, it would be idle to follow out further any speculation as to the history of the Neilgherries prior to the first

coming to them of the Todars, for as no coins or inscriptions or even hieroglyphics have been found in any of the cairns, or on their contents, there exists no evidence whatever by which inquiry could be guided into the right course.

With the Todars then commences the only (partially) known history of the Neilgherries.

At the time of their immigrating, they probably found no aboriginal inhabitants settled on them, and seeing, in the solitary and inaccessible character of the mountain region which they had discovered, a fitting spot for the undisturbed exercise of their singular religion, and peculiar pastoral habits—for the former of which they had possibly endured persecution amongst the tribes of the plains—they determined on permanently occupying it. Ages, according to their belief, must have passed while they remained in undisturbed possession of the Hills, extending over such a space of time, that they express their belief that the founders of their tribe were created on them; until at length a small band of Kothers found their way up from the plains, and besought permission to till certain tracts of land which they indicated. From this era may be said to have commenced the self arrogated sovereignty of the Todars over the land forming the plateau of the Neilgherries, as, conceding the privilege sought for by the new comers, they stipulated that a certain proportion of all the grains which they might produce from the soil, should be annually presented to them as "goodoo" or tribute, in acknowledgement of their feudal right over the territory. Not long after this, and according to their traditions, 3 or 4 centuries ago, a party of "Burghers," or "Buddughurs" emigrated from the "North country," (probably the Northern part of Mysore and Canara,) and came to the Neilgherries; and being good cultivators, at once perceived the advantages offered to them in the virgin and rich soil which they saw on all sides. They accordingly appear to have obtained permission to settle and cultivate land, upon the same terms as those granted to the Kothers, and inviting more of their brethren to join them, they soon swelled into a numerous tribe and spread over the Hills, constructing their villages, and enclosing their fields (and doubtless clearing away much forest) in all directions. I can find no evidence of any sovereign ruler having been acknowledged amongst the Hill people, until about a century before the reign of Hyder Ally in Mysore, when according to the tales of the Kothers and Burghers, there were 3 princes or chiefs who had sway over them, one in Todanaad who resided in a fortress called Mullaycotta, the walls and ditch of which still exist on a Hill to the eastward of the village of

The coming of the Kothers to the Hills.

The coming of the Burghers.

The 3 princes or chiefs of the Neilgherries.

"Shoolooroo," and westward of Mootenaad and the Seegoor pass, (vide B sheet of Map); one in Meykenaad in the fortress, the ruins of which are now called "Hoolicul Droog" situated on a lofty ridge overlooking the Coonoor pass, and a third in Parungenaad in a fort the site of which is still pointed out near Kotergherry and called "Konagerry," though no vestige of a fort remains now recognizable. Their traditions state that at this time, in consequence of disputes between the Burghers and Kothers regarding their respective boundaries, a general settlement of their lands took place under the auspices of the three chiefs, when the lines of demarcation were definitively fixed; and though only by oral indication, in consequence of the ignorance of reading and writing which then, as now, prevailed, the limits of the territory of each tribe were so distinctly identified, that ever since, up to the present time, no disputes about them have ever been known to occur.

Hyder Ally lays the Hill people under contribution.

What became of these three chiefs cannot be guessed from their traditions: but it seems probable, that Hyder Ally, having sent emissaries to lay the Hill people under contribution, had his attention called to the value of the territory, both as a producing district and as a strong post, from which he might harass his enemies in Malayalum and Coimbatore. He accordingly appears to have seized upon two of the three forts which commanded the passes to those countries, viz., Hoolicul Droog and Mullaycotta, and having deepened their ditches, heightened their walls, and otherwise strengthened them, he put strong garrisons into them, which both controlled the Hill tribes, and observed and harrassed the kingdoms below them. This tradition is borne out by the present appearance of these two forts, which although partially ruinous, yet retain sufficient evidence of comparatively modern occupation, while the third (Konagerry) has become entirely obliterated.

Taxation by Hyder.

With Hyder the system of taxation must first have commenced on the Hills, and the imposts levied, both by him and by his son Tippoo, on the mountaineers, must have been very severe. Old inhabitants, who have a clear recollection of those times through the tales of their fathers, and an imperfect one through their own retrospect, state that whole villages used to be despoiled of their year's grain and fodder by Hyder's officers, who made incursions continually amongst them, and forced the villagers to carry their own plundered property down the face of the Hills to Danaikencotta, where the Mysoreans had a strong fort and an extensive magazine. Hence to the Hill tribes the overthrow of Tippoo, and the transfer of their territory to the East India Company,

was a change fraught with the most beneficial results; and I imagine the tranquillity and security, which they have ever since enjoyed, have rendered these people a portion of the most contented of the host who now acknowledge the Honorable Company's sway. With the

Public Buildings.

exception of the buildings erected along the various lines of road for the accommodation of travellers, the public buildings of this district are chiefly congregated within the limits of the cantonment of Ootacamund. They consist of

A Public Office—containing the Magistrate's and Commanding Officer's establishments; the Pay Office, Post Office, and rooms for the security of property in the charge of the Magistrate and Commanding Officer.

A substantially built Church, with burial-ground.

A commodious Dispensary.

A Jail, so called, from convicts, employed on the roads, having been quartered in the sheds attached to the building: at present unappropriated.

A Choultry situated near the main bazaar, for the accommodation of native travellers.

A Kharkhana, or building for housing Government cattle employed on the roads: the establishment for this purpose costing Rupees 56-12 per mensem.

A Cutwall's Choultry for police purposes.

A Tahsildar's Cutcherry.

A Meteorological Observatory on the summit of Dodabetta, erected at the expense of Government.

Traveller's Bungalows at Pykara, Neddiwuttum, Kulhutty, and Coonoor; one at the foot of the Koondahs called the "Avalanche;" and one at the summit of the Koondahs at Sispara.

Chettrums for natives at Nunjanaad, Coonoor, Avalanche, Sispara, Koondahs in the long valley, Wallakadoo in the Sispara pass, the Kaitee valley, Berliar in the Coonoor pass, and at Kulhutty Seegoor pass.

These Chettrums are almost all new buildings with substantial walls, roofs of tiles, and doors and windows; but so singular are the ideas of natives regarding accommodation for themselves, that they prefer passing the night in little thatched huts built by wayfarers, and seldom use the Chettrums, except to cook their food in. The bridges have been already enumerated under the proper head.

Kotergherry,
Neilgherry Hills,
29*th February*, 1848.

J. OUCHTERLONY, Captain,
*Superintendent Neilgherry Survey.*

### *Statement of the Population of the Cantonment of Ootacamund, (Natives.)*

| | Tamil. | Name of Caste. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Remarks. |
|---|---|---|---|---|---|---|---|
| Main Bazaar. | வெள்ளாழர் ...... | Vellaulers.......... | 137 | 144 | 88 | 84 | Bricklayers, butlers, &c. |
| | வெள்ளாழமுதலிகள் | Vellauler Moodeliars.. | 17 | 18 | 4 | 5 | Do. do. |
| | ரசபுத்தூரர்கள் .... | Rajpoots............ | 11 | 11 | 7 | 7 | Venders of sweetmeats. |
| | மருட்டியர்கள் .... | Mahrattas.......... | 60 | 52 | 26 | 34 | Tailors. |
| | ஆண்டிகள்......... | Aandies............ | 10 | 0 | 0 | 0 | Cloth merchants. |
| | ளாடகசாய்கள்..... | Lodakaseys......... | 29 | 27 | 18 | 19 | Mutton butchers. |
| | தாசிகள்............ | Dancing caste....... | 18 | 37 | 2 | 3 | Dancing girls and players. |
| | கம்மாளர்......... | Kummaulers......... | 59 | 57 | 30 | 28 | Goldsmiths, ironsmiths, carpenters, &c. |
| | செட்டிகள்......... | Chetties........... | 17 | 8 | 5 | 3 | Merchants. |
| | கோமட்டிகள்...... | Comaties........... | 4 | 0 | 0 | 0 | Do. |
| | துலுக்கர்கள்....... | Mussulmauns........ | 142 | 151 | 124 | 118 | Butchers, timber dealers, peons, shopkeepers, &c. |
| | செட்டிகள்........ | Saides do.......... | 25 | 7 | 3 | 2 | Bombay hawkers, or itinerant merchants. |
| | பாரீஷ்கள்.......... | Parsees............ | 1 | 1 | 1 | 1 | Bakers. |
| | லப்பகள்........... | Lubbies............ | 152 | 18 | 8 | 9 | Bazaarmen and traders. |
| | அம்மட்டர்கள்...... | Barbers............ | 18 | 16 | 8 | 7 | Barbers. |
| | பள்ளர்கள்......... | Pullers............ | 22 | 24 | 14 | 7 | Hunters or shikanees. |
| | பறயர்கள்.......... | Madras Pariahs...... | 196 | 233 | 120 | 106 | Cooks, horsekeepers, maties, &c. |
| | சங்குப்பறயகள்..... | Chungoo do. .... | 117 | 86 | 59 | 44 | Coolies for carrying loads. |
| | தீயர்கள்........... | Teayers do. .... | 1 | 1 | 0 | 0 | Malayalum men. |
| | போட்டகிகள்..... | Portuguese......... | 7 | 6 | 3 | 2 | |
| | தோட்டிகள் ...... | Toties, Pariahs...... | 46 | 36 | 18 | 22 | Scavengers. |

| | | | | | | | | Houses. | | | | Cattle, &c. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tiled houses. | Thatched houses. | Tiled shops. | Thatched shops. | Bullocks. | Cows. | Calves. | Buffaloes. | Calves. | Bandies. | Horses. | Schools. | Mosques and Temples. |
| Uggrarum. | பிருமணர்கள்..... | Brahmins.......... | 25 | 16 | 6 | 5 | Chiefly in the public offices. | | | | | | | | | | | | | |
| | கவரேகள்......... | Gentoos........... | 6 | 5 | 2 | 1 | Do. and servants. | | | | | | | | | | | | | |
| | மருட்டியர்கள்.... | Maharattas......... | 2 | 0 | 0 | 0 | Tailors. | | | | | | | | | | | | | |
| | கம்மாளர்கள்...... | Cummaulers........ | 3 | 2 | 2 | 2 | | | | | | | | | | | | | | |
| | | East Indians........ | 2 | 1 | | | | | | | | | | | | | | | | |
| | | Total... | 1127 | 957 | 548 | 509 | | 189 | 454 | 120 | 5 | 24 | 15 | 7 | 0 | 0 | 10 | 9 | 2 | 3 |

*Native Population of Ootacamund, &c. (continued.)*

| | Tamil. | Name of Caste. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Remarks. |
|---|---|---|---|---|---|---|---|
| Ottey, (site of former Otteyka-Mund.) | வெள்ளாழர்கள்........ | Vellaulers.......... | 19 | 16 | 8 | 6 | Bricklayers, &c. |
| | கவரேகள்............ | Gentoos. .......... | 16 | 19 | 6 | 11 | Carpenters, gardeners, &c. |
| | மராட்டியற்கள்........ | Maharattas ........ | 2 | 0 | 0 | 0 | Tailors, peons. |
| | கெங்கிடகாரகன்னடிகள் | Gengeda Kunawadies. | 25 | 18 | 8 | 10 | Coolies, working in gardens, &c. |
| | ஒக்கிலிகர்............ | Okeleyar.......... | 3 | 3 | 1 | 2 | Do. do. |
| | தொரயர்கள்.......... | Toreyoor...... .... | 6 | 4 | 5 | 3 | Do. do. |
| | கம்மாளர்கள்.......... | Kummaulers. ....... | 5 | 0 | 0 | 0 | Smiths, carpenters, &c. |
| | துலுக்கர்கள்.......... | Mussulmauns ....... | 4 | 5 | 3 | 4 | Peons, gardeners, &c. |
| | சாணர்கள்...... ...... | Sanaars..... ....... | 2 | 2 | 2 | 3 | Toddy dealers. |
| | தீயற்கள்............... | Teahers. .......... | 3 | 2 | 1 | 2 | Malayalum. |
| | பறயற்கள்............ | Madras Pariahs. .... | 49 | 58 | 25 | 19 | Cooks and servants, horsekeepers, &c. |
| | சங்குப்பறயற்கள்...... | Chungoo do. .... | 20 | 14 | 21 | 10 | Coolies. |
| | சக்கிலிகள்............ | Chucklers do. .... | 7 | 7 | 6 | 3 | 0 111 0 1 6 54 19 4 1 2 0 1 0 |
| Codeappa's garden. | கெங்கிடகாரகன்னடியற்க | Gungadee Kunnadies. | 22 | 24 | 18 | 14 | |
| | கன்னடிவண்ணார் ...... | Kunnady Washermen | 1 | 1 | 0 | 1 | |
| | பறகன்னடியற்கள்...... | Pariah Kunnadies.... | 6 | 3 | 2 | 3 | 0 32 0 0 4 92 28 20 6 0 0 0 0 |
| Bandy soley. | கெங்கிடகாரகன்னடியர் | Gungadee Kunnadies | 39 | 29 | 23 | 17 | |
| | பறகன்னடியர்கள்....... | Pariah Kunnadies.... | 11 | 6 | 4 | 6 | |
| | பறயற்கள் ........... | Madras Pariahs...... | 50 | 56 | 28 | 33 | |
| | சங்குப்பறயர்கள்....... | Chungoo do. .... | 18 | 11 | 6 | 6 | 0 71 0 0 6 38 11 6 1 0 0 0 0 |
| | | Total... | 308 | 278 | 167 | 153 | 0 214 0 1 16 184 58 30 8 2 0 1 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Caundel Bazar. | வெள்ளாளர்கள் | Vellaulers | 105 | 84 | 43 | 62 | Vide the other side. |
| | கவரேகள் | Gentoos | 45 | 36 | 11 | 21 | Do. |
| | கைக்கோளயர்கள் | Kaikolars | 2 | 4 | 3 | 2 | Married dancing caste. |
| | கம்மாளர்கள் | Kummaulers | 9 | 9 | 9 | 7 | Vide the other side. |
| | ரசபுத்திரர்கள் | Rajpoots | 3 | 1 | 1 | 1 | Do. |
| | வெள்ளாழயெடையர் | Vellaulers Edears | 2 | 3 | 1 | 1 | Do. |
| | தெலுங்குபோய்கள் | Telugoo Bearers | 28 | 9 | 6 | 5 | Do. |
| | கெங்கிடகாரகன்னடியர் | Gungadee Kunnadies. | 24 | 13 | 5 | 9 | Do. |
| | துலுக்கர்கள் | Mussulmauns | 10 | 11 | 7 | 9 | Do. |
| | அம்பட்டர்கள் | Barbers | 21 | 15 | 10 | 8 | Do. |
| | வண்ணார்கள் | Washermen | 34 | 38 | 19 | 28 | Do. |
| | வஷ்ட்டுணுவர்கள் | Vastoonoovurgul | 3 | 0 | 0 | 0 | Professional beggars. |
| | வள்ளுவர்கள் | Valloovurgul | 3 | 0 | 0 | 0 | Do. |
| | தாசிரிகள் | Daseenee | 2 | 0 | 0 | 0 | Do. |
| | வாடக்கசாய்கள் | Ladakasars | 4 | 3 | 2 | 2 | Vide the other side. |
| | வாணியற்கள் | Vunneyars | 3 | 3 | 2 | 2 | Do. |
| | பறயற்கள் | Madras Pariahs | 118 | 129 | 84 | 93 | Do. |
| | பறவண்ணார்கள் | Washermen do. | 6 | 7 | 9 | 8 | Do. |
| | சங்குப்பறயற்கள் | Chungoo do. | 50 | 32 | 18 | 6 | Do. |
| | பறகன்னடியர்கள் | Kunnady do. | 136 | 104 | 68 | 73 | Do. |
| | தெலுங்குப்பறயர்கள் | Telugoo do. | 11 | 6 | 3 | 5 | Do. |
| | சக்கிலிகள் | Chucklers do. | 26 | 28 | 21 | 15 | Do. |
| | கன்னடிசக்கிலிகள் | Kunnady chucklers | 16 | 13 | 13 | 14 | Do. |
| | பள்ளர்கள் | Pullers | 32 | 24 | 11 | 19 | Do. |
| | தோட்டிகள் | Toties | 6 | 4 | 2 | 2 | Do. |
| | போட்டகிகள் | Portuguese | 2 | 1 | 2 | 2 | Do. |
| | | Total... | 701 | 577 | 350 | 394 | |

| Tiled houses. | Thatched houses. | Tiled shops. | Thatched shops. | Bullocks. | Cows. | Calves. | Buffaloes. | Calves. | Asses. | Bandies. | Horses. | Temples. | Schools. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 480 | 1 | 13 | 159 | 11 | 4 | 2 | 1 | 5 | 12 | 11 | 2 | 1 |

*Native Population of Ootacamund, &c. (continued.)*

| | Tamil. | Name of Caste. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Tiled houses. | Thatched houses. | Tiled shops. | Thatched shops. | Bullocks. | Cows. | Calves. | Buffaloes. | Calves. | Asses. | Bandies. | Horses. | Temples. | Schools. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vunnar-pett. | வெள்ளாழர்........... | Vellaulers......... | 5 | 5 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | வண்ணாரபறயர்கள்.... | Washermen ...... | 16 | 14 | 11 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | பறயற்கள்............ | Pariahs. ......... | 17 | 16 | 13 | 11 | 0 | 36 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Otooput-trey. | வெள்ளாழர்.......... | Vellaulers... .... | 6 | 6 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | சங்குப்பறயற்கள்...... | Chungoo Pariahs. .. | 5 | 2 | 1 | 1 | 0 | 5 | 0 | 2 | 1 | 8 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Uttacara Teeravoo. | துலுக்கர்.... ........ | Mussulmauns...... | 7 | 5 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | பறயற்............ .... | Pariahs........... | 17 | 10 | 9 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | ரெட்டிகள்............. | Reddies.......... | 1 | 3 | 0 | 0 | 0 | 25 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Munjana-coray. | வெள்ளாழர். ......... | Vellaulers ....... | 11 | 9 | 10 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | வண்ணார்......... .... | Washermen. .... | 3 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | பறயற்............... | Pariahs.......... | 5 | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | சங்குப்பறயற் ........ | Chungoo Pariahs. .. | 9 | 7 | 3 | 4 | 0 | 26 | 0 | 0 | 0 | 9 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yeddey Theravoo. | யேனடயற்கள் ........ | Yendears ........ | 45 | 56 | 20 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | கம்மாளர்............ | Kummaulers...... | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | வள்ளுவபண்டாரம் .... | Vullavoo pundaram | 4 | 5 | 3 | 3 | 0 | 50 | 0 | 0 | 10 | 60 | 20 | 120 | 42 | 0 | 4 | 0 | 0 | 0 |
| | KOTERGHERRY ....... | All Castes......... | 120 | 115 | 53 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | COONOOR BAZAAR...... | Do. ........ | 139 | 134 | 60 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | ARAVUNGAAD Do.*.... | Do. ........ | 9 | 10 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Total.... | 420 | 405 | 207 | 181 | 0 | 142 | 0 | 2 | 23 | 78 | 27 | 123 | 43 | 0 | 8 | 0 | 0 | 1 |

* In the Valley called Sappers' Camp between Kaitee and Coonoor.

*Census of the Population of the Neilgherry Hills, taken to the 1st of December, 1847.*

To which is appended a statement of the number of dwelling houses, temples, cattle, ploughs, &c. belonging to each Village with general explanatory remarks.

## THE TODAS.

*Particulars of Toda-munds in the "Toda-naad" Division of the Neilgherries.*

| Number. | Name of Mund. | | Adults | | Children. | | Buffaloes. | | Calves. | | No. of Huts. | No. of Temples. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | English. | Tamil. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | | | | |
| 1 | Tharnadoo........ | தார்நாடு............ | 3 | 2 | 2 | 5 | 6 | 86 | 4 | 12 | 3 | 1 | 1 | 1 | |
| 2 | Beyvermund........ | பேயவர்மந்து....... | 3 | 4 | 5 | 9 | 6 | 60 | 3 | 15 | 2 | 1 | 1 | 1 | |
| 3 | Gurreealoomund.... | கரியாளுமந்து...... | 2 | 3 | 2 | 3 | 5 | 55 | 7 | 16 | 3 | 1 | 1 | 1 | |
| 4 | Thalapetharymund .. | தல்ப்பிதேரிமந்து.... | 4 | 2 | 4 | 7 | 30 | 90 | 13 | 25 | 3 | 2 | 2 | 1 | |
| 5 | Coneycoraymund..... | கோணிக்கொரோமந்து | 3 | 3 | 5 | 4 | 7 | 30 | 4 | 9 | 2 | 1 | 1 | 1 | |
| 6 | Thanadoomund...... | தேநாடுமந்து........ | 3 | 2 | 3 | 4 | 30 | 120 | 16 | 32 | 4 | 2 | 2 | 2 | |
| 7 | Baithomund........ | பேட்தோமந்து....... | 3 | 2 | 1 | 3 | 14 | 32 | 3 | 8 | 3 | 1 | 1 | 1 | |
| 8 | Emmagulmund...... | யெம் மேகல்மந்து..... | 2 | 2 | 2 | 1 | 4 | 30 | 3 | 9 | 3 | 1 | 1 | 1 | |
| 9 | Neercoonjee........ | நீர்குண்ஜி. .. ....... | 3 | 2 | 1 | 3 | 7 | 26 | 5 | 9 | 2 | 1 | 1 | 1 | |
| 10 | Maulcodoo.......... | மால்கோடு.......... | 4 | 3 | 4 | 2 | 5 | 16 | 2 | 3 | 2 | 1 | 1 | 1 | |
| 11 | Nathanry........... | நாத்தேநேரி.......... | 2 | 1 | 3 | 2 | 16 | 70 | 7 | 14 | 4 | 2 | 2 | 1 | |
| 12 | Pinnapool.......... | பின்னேப்பூல்......... | 2 | 1 | 1 | 1 | 14 | 40 | 9 | 16 | 2 | 1 | 1 | 1 | |
| 13 | Nathy............. | நேத்தி............. | 1 | 1 | 3 | 2 | 6 | 26 | 4 | 12 | 2 | 1 | 1 | 1 | |
| 14 | Currymoolee ....... | கரிமொளி........... | 2 | 1 | 2 | 4 | 4 | 20 | 2 | 3 | 2 | 1 | 1 | 1 | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Anacungooloo...... | ஆனக்கனகூளு...... | 5 | 3 | 3 | 4 | 7 | 16 | 0 | 3 | 2 | 1 | 1 | 1 | |
| 16 | Bellathycoray........ | பெல்லாதிகோரே.... | 3 | 3 | 9 | 7 | 26 | 116 | 16 | 33 | 2 | 2 | 1 | 2 | |
| 17 | Canthalmund....... | காகதல்மந்து....... | 5 | 5 | 2 | 2 | 8 | 24 | 3 | 7 | 5 | 1 | 1 | 1 | |
| 18 | Betmund.......... | பெட்மந்து........ | 4 | 3 | 3 | 2 | 30 | 80 | 8 | 20 | 3 | 1 | 1 | 1 | |
| 19 | Mathynymund...... | மாதிநிமந்து........ | 3 | 1 | 2 | 1 | 15 | 50 | 8 | 16 | 2 | 1 | 1 | 1 | |
| 20 | Munjagul......... | மஞ்சகல்.......... | 2 | 2 | 3 | 3 | 16 | 70 | 7 | 16 | 2 | 1 | 1 | 1 | |
| 21 | Cycathal.......... | கைகேதாள்......... | 2 | 1 | 3 | 2 | 7 | 33 | 4 | 11 | 3 | 1 | 1 | 1 | |
| 22 | Becapathy......... | பிக்கேபதி.......... | 2 | 3 | 2 | 4 | 6 | 16 | 2 | 4 | 2 | 1 | 1 | 1 | |
| 23 | Jakathanay......... | சக்கதானே......... | 1 | 1 | 5 | 6 | 9 | 42 | 3 | 14 | 2 | 1 | 1 | 1 | |
| 24 | Ettuppacathy....... | யிட்டப்பகேத்தி..... | 2 | 1 | 3 | 1 | 11 | 54 | 4 | 8 | 3 | 1 | 1 | 1 | |
| 25 | Woolcodoo......... | உளல்கோடு........ | 3 | 1 | 0 | 0 | 4 | 32 | 5 | 11 | 2 | 1 | 1 | 1 | |
| 26 | Currycul.......... | கரிச்கல்........... | 2 | 2 | 4 | 0 | 6 | 51 | 4 | 6 | 2 | 1 | 1 | 1 | |
| 27 | Bathary........... | பாததேரி.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 28 | Mail Currycul...... | மேல்க்கரிகல்........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 29 | Coodymund........ | கூடிமந்து.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 30 | Coodymaul......... | கோடிமால்......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 | |
| 31 | Curythaloo......... | கரிதாளு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 32 | Crothal........... | குரோதாள்........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 33 | Kengodoo......... | கேங்கோடு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 34 | Thoraygoodoo...... | தோரேகூடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 2 | |
| 35 | Thavaloocoraymund.. | தவுட்டுகோரேமந்து.. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 36 | Aveymund......... | ஏவிமந்து.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 | |
| 37 | Mailgoodoo........ | மேல்கூடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 1 | |
| 38 | Bellathycoray....... | பெல்லாதிகோரே.... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 2 | |
| 39 | Coodygadoo........ | குடிகாடு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| | | Carried forward.... | 71 | 55 | 77 | 82 | 299 | 1285 | 146 | 332 | 102 | 44 | 43 | 43 | |

*Particular of Toda-munds in the Toda-naad Division of the Neilgherries, (continued.)*

| Number. | Name of Mund. | | Adults. | | Children. | | Buffaloes. | | Calves. | | No. of Huts. | No. of Temples. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | English. | Tamil. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | | | | |
| | | Brought forward.. | 71 | 55 | 77 | 82 | 299 | 1285 | 146 | 332 | 102 | 44 | 43 | 43 | |
| 40 | Bethencoodoo....... | பெத்தன்கூடு....... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 41 | Thoraygoodoo ..... | தோரோகூடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 1 | |
| 42 | Codanalay.......... | கடநெலே.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | |
| 43 | Mootoonaad......... | மூத்துநாடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 44 | Athen Tharnaad.... | யெத்தின்தார்நாடு... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 2 | |
| 45 | Kytharagoo......... | கைதெரகு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 46 | Currycul........... | கரிக்கல்............ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 2 | |
| 47 | Coodyagadoo....... | கொடியேகாடு...... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 48 | Baircadavoo......... | பேர்க்கடவு........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 49 | Condalarey.......... | கொண்டலேரி...... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 2 | |
| 50 | Buggoolah.......... | பக்குளா.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 51 | Cubbulgoodoo....... | கப்பல்கூடு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 52 | Oothal............. | ஊதாள்............ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 53 | Oonna............. | ஒன்னே............ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 54 | Thabagoodal........ | தாபேகுடல்....... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 55 | Argo............... | ஆர்கோ............ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | |
| 56 | Coorathal.......... | குரோதாள்........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 57 | Porthy............. | போர்தி........... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 58 | Maicodoo .......... | மேய்க்கோடு........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 2 |
| 59 | Mail Betmund...... | மேல்பெட்மந்து.... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 60 | Codoomund......... | கோடுமந்து........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| 61 | Ummandoo......... | அம்மெநாடு. ....... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| 62 | Nadoogoodoo........ | நெடுகூடு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 1 |
| 63 | Cuggaroo'.......... | கங்கேரு........ ... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| 64 | Coondoothal.. ....... | குண்டுதாள்........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| 65 | Adacoray .......... | யெடக்கோரே...... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| 66 | Nareygo. .......... | நாரிகோ.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 |
| 67 | Naragoodoo ........ | நாரோகூடு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 |
| 68 | Avaycoray.......... | யெவக்கோறே...... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 |
| 69 | Povoora.............. | போவுரே..... .... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 70 | Cuthagodoo ........ | க்த்தேகாடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 71 | Thereareymund...... | திரியேரிமந்து...... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 |
| 72 | Anayculloo. ........ | ஆனேகல்லு........ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 |
| 73 | Coonthagodoo....... | குந்தேகூடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| 74 | Koveagadoo.... ..... | கவ்வெகாடு......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |
| | | Total in the Toda-naad.. | 71 | 55 | 77 | 82 | 299 | 1285 | 146 | 332 | 183 | 79 | 80 | 82 |

*Particulars of Toda-Munds in the Meykenaad Division.*

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | Neddy Mund....... | நேடிமந்து.......... | 2 | 3 | 3 | 2 | 16 | 74 | 3 | 16 | 3 | 1 | 1 | 1 |
| 76 | Keilkoodiakadoo.... | கிள்குடியேகாடு...... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 |
| 77 | Peyree Mund......... | பேரிமந்து......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 |
| | | Total in the Meykenaad.. | 2 | 3 | 3 | 2 | 16 | 74 | 3 | 16 | 9 | 3 | 3 | 3 |
| | | Carried forward.. | 73 | 58 | 80 | 84 | 315 | 1359 | 149 | 348 | 192 | 82 | 83 | 85 |

*Particulars of Toda-Munds in the Parungenaad Division.*

| Number. | Name of Mund. | | Adults. | | Children. | | Buffaloes. | | Calves. | | No. of Huts. | No. of Temples. | No. of breeding Huts. | No. of Cattle P^c^ns. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | English. | Tamil. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | | | | |
| | | Brought forward .. | 73 | 58 | 80 | 84 | 315 | 1359 | 149 | 348 | 192 | 82 | 83 | 85 | |
| 78 | Narkodemund...... | நாற்கோடுமந்து..... | 2 | 1 | 1 | 1 | 2 | 6 | 1 | 2 | 2 | 1 | 1 | 1 | Tenumund in ruins and 3 others. |
| 79 | Beydookul ,, .... | பேடுகளமந்து ...... | 3 | 2 | 2 | 2 | 2 | 15 | 2 | 3 | 2 | 1 | 1 | 1 | |
| 80 | Koroomodoo ,, .... | கோறுமோடு......... | 4 | 3 | 2 | 2 | 3 | 9 | 2 | 3 | 3 | 1 | 1 | 1 | |
| 81 | Koreekul ,, .... | கேழிகள்............. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 82 | Kodakudoo. ,, .... | கோடகாடு.......... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 83 | Koditaal............. | கோடித்தாள்....... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| 84 | Halliyoor........... | அள்ளியூர்.......... | 2 | 5 | 2 | 4 | 3 | 4 | 1 | 2 | 3 | 1 | 0 | 1 | |
| 85 | Buttamund......... | பட்டமந்து........ | 2 | 1 | 0 | 1 | 4 | 25 | 3 | 8 | 1 | 0 | 1 | 0 | |
| | | Total in the Parungenaad.. | 13 | 12 | 7 | 10 | 14 | 59 | 9 | 18 | 17 | 7 | 7 | 7 | |
| | | GRAND TOTAL.. | 86 | 70 | 87 | 94 | 329 | 1418 | 158 | 366 | 209 | 89 | 90 | 92 | |

## THE BURGHERS.

*Particulars of Burgher Villages in the Toda-naad Division.*

| Registered No. | Name of Village. | | Adults. | | Children. | | Buffaloes. | | Calves. | | Cattle. | | Calves. | | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | English. | Tamil. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | | | | |
| 1 | Cadanaad....... | கடநாட்....... | 5 | 7 | 4 | 8 | 2 | 2 | 3 | 2 | 8 | 6 | 3 | 4 | 3 | 4 | 2 | 4 | |
| 2 | Unneycoray (3).... | ஆட்டடடி...... | 20 | 17 | 9 | 12 | 10 | 14 | 4 | 9 | 40 | 45 | 10 | 17 | 22 | 22 | 8 | 15 | |
| 3 | Uttavallay (4).... | அண்ணிக்கொரே. | 28 | 22 | 11 | 9 | 16 | 112 | 4 | 19 | 68 | 54 | 16 | 18 | 36 | 22 | 10 | 14 | |
| 4 | Adhutty (2)...... | அட்டவாளே.... | 6 | 7 | 5 | 6 | 4 | 16 | 0 | 8 | 6 | 4 | 2 | 4 | 5 | 4 | 2 | 4 | |
| 5 | Thoonary........ | தூநேரி........ | 18 | 20 | 13 | 17 | 12 | 30 | 4 | 6 | 28 | 42 | 9 | 13 | 14 | 26 | 10 | 9 | |
| 6 | Kenggamoody.... | கெங்காமுடி.... | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | |
| 7 | Cothavamoody.... | கொதவமுடி.... | 20 | 21 | 12 | 13 | 9 | 22 | 2 | 4 | 22 | 19 | 8 | 9 | 10 | 21 | 4 | 14 | |
| 8 | Edoovutty......... | யிடுவட்டி...... | 5 | 6 | 5 | 7 | 2 | 2 | 2 | 1 | 4 | 4 | 2 | 1 | 3 | 6 | 1 | 4 | |
| 9 | Mooratoothal...... | முரட்டுதாள்.... | 5 | 4 | 2 | 2 | 2 | 4 | 1 | 1 | 6 | 4 | 2 | 3 | 3 | 7 | 1 | 4 | |
| 10 | Thorayhutty....... | துரோஅட்டி..... | 5 | 6 | 5 | 4 | 1 | 2 | 1 | 0 | 6 | 6 | 2 | 1 | 3 | 6 | 1 | 3 | |
| 11 | Osayhutty......... | ஒசஅட்டி...... | 4 | 3 | 3 | 2 | 1 | 3 | 3 | 2 | 6 | 7 | 2 | 3 | 3 | 6 | 1 | 3 | |
| 12 | Oormalay........ | உளர்மலே...... | 5 | 9 | 5 | 4 | 2 | 4 | 3 | 2 | 7 | 5 | 1 | 2 | 3 | 4 | 1 | 4 | |
| 13 | Oolooputty....... | உலுப்பட்டி.... | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 5 | 1 | 3 | |
| 14 | Kadanaadoo-ooroo.. | கடநாடுஉளரு... | 17 | 19 | 15 | 18 | 4 | 23 | 4 | 14 | 28 | 19 | 5 | 12 | 15 | 19 | 2 | 4 | |
| | Carried forward.... | | 142 | 146 | 92 | 105 | 68 | 237 | 34 | 72 | 231 | 216 | 63 | 87 | 122 | 154 | 45 | 88 | |

*Particulars of Burgher Villages in the Toda-naad Division, (continued.)*

| Registered No. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Brought forward. | 142 | 146 | 92 | 105 | 68 | 237 | 34 | 72 | 231 | 216 | 63 | 87 | 122 | 154 | 45 | 88 | |
| 15 | Thavanay........ | தாவணே........ | 17 | 18 | 16 | 14 | 2 | 15 | 2 | 4 | 28 | 9 | 2 | 4 | 14 | 12 | 3 | 7 | |
| 16 | Coonthachuppay... | குந்தசப்பே .... | 6 | 7 | 5 | 6 | 2 | 2 | 2 | 2 | 27 | 4 | 4 | 4 | 14 | 8 | 2 | 4 | |
| 17 | Thoommanahutty... | தும்மன் அட்டி.... | 7 | 9 | 6 | 7 | 7 | 10 | 1 | 4 | 14 | 12 | 4 | 2 | 6 | 8 | 1 | 6 | |
| 18 | Kenthooray....... | கெந்துரோ ...... | 6 | 7 | 3 | 6 | 2 | 1 | 0 | 0 | 8 | 6 | 4 | 3 | 4 | 7 | 1 | 5 | |
| 19 | Cuppuchy........ | கப்பசசி........ | 8 | 10 | 4 | 5 | 5 | 2 | 2 | 3 | 10 | 9 | 4 | 2 | 4 | 10 | 2 | 4 | |
| 20 | Thimmanadah .... | திம்மநாடா .... | 4 | 4 | 2 | 2 | 2 | 2 | 1 | 2 | 6 | 5 | 2 | 1 | 3 | 5 | 1 | 3 | |
| 21 | Moreyculloo....... | மோரிகலலு .... | 6 | 5 | 2 | 3 | 2 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 3 | |
| 22 | Cumbhutty........ | கம்மட்டி.......... | 6 | 6 | 3 | 4 | 2 | 3 | 1 | 1 | 5 | 7 | 2 | 2 | 4 | 7 | 1 | 4 | |
| 23 | Pilloocumbay...... | பில்லுகம்பே.... | 4 | 5 | 2 | 4 | 2 | 1 | 0 | 0 | 6 | 6 | 2 | 2 | 3 | 6 | 1 | 3 | |
| 24 | Cove'a........... | கவ்வே.......... | 6 | 5 | 3 | 6 | 3 | 3 | 0 | 3 | 8 | 10 | 2 | 4 | 4 | 6 | 1 | 4 | |
| 25 | Murrayculloo... | மறக்கல்லு....... | 4 | 4 | 3 | 4 | 1 | 3 | 1 | 2 | 6 | 8 | 1 | 3 | 2 | 5 | 1 | 3 | |
| 26 | Kavelooray....... | காவிலூரோ...... | 5 | 6 | 3 | 3 | 1 | 2 | 2 | 2 | 6 | 6 | 2 | 3 | 3 | 6 | 2 | 4 | |
| 27 | Odayhutty......... | ஒடை அட்டி....... | 13 | 13 | 12 | 12 | 4 | 19 | 4 | 11 | 34 | 22 | 4 | 0 | 12 | 15 | 1 | 4 | |
| 28 | Covedhutty....... | கவுட்டடி......... | 7 | 9 | 5 | 6 | 2 | 3 | 2 | 2 | 14 | 8 | 2 | 4 | 6 | 9 | 2 | 5 | |
| 29 | Culhutty ........ | கல்லட்டி........... | 16 | 18 | 16 | 16 | 3 | 23 | 2 | 6 | 28 | 18 | 4 | 3 | 14 | 18 | 3 | 6 | |
| 30 | Vunneymarahutty.. | வன்னிமர அட்டி... | 4 | 4 | 4 | 2 | 2 | 3 | 2 | 2 | 4 | 1 | 1 | 0 | 2 | 3 | 1 | 3 | |
| 31 | Akeconey......... | யேககோணி...... | 9 | 10 | 10 | 12 | 9 | 20 | 6 | 14 | 16 | 12 | 4 | 5 | 7 | 13 | 4 | 4 | |
| 32 | Thuttanarey...... | தட்டநேரி...... | 6 | 6 | 4 | 5 | 3 | 4 | 4 | 5 | 8 | 4 | 2 | 1 | 3 | 8 | 2 | 3 | |
| 33 | Karapilloo........ | காலப்பிள்ளு.... | 4 | 4 | 2 | 3 | 2 | 2 | 2 | 1 | 5 | 3 | 1 | 2 | 2 | 5 | 2 | 4 | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | Oolluthy........ | உல்லத்தி...... | 9 | 11 | 6 | 6 | 7 | 4 | 2 | 4 | 16 | 14 | 4 | 2 | 3 | 11 | 2 | 5 |
| 35 | Mailooroo....... | மேலூரு....... | 14 | 14 | 12 | 11 | 4 | 16 | 5 | 4 | 18 | 6 | 2 | 2 | 9 | 16 | 2 | 3 |
| 36 | Mullygaray...... | மல்லிகரே...... | 4 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 4 | 2 | 1 | 1 | 2 | 4 | 1 | 3 |
| 37 | Uthycul......... | அத்திக்கல்..... | 3 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 4 | 1 | 3 |
| 38 | Nunjanadoo...... | நஞ்சநாடு...... | 9 | 11 | 13 | 6 | 8 | 18 | 5 | 7 | 14 | 12 | 5 | 4 | 9 | 15 | 4 | 8 |
| 39 | Cooroothoogoolee.. | குருத்துகுளி..... | 5 | 5 | 2 | 3 | 7 | 8 | 6 | 5 | 8 | 9 | 2 | 4 | 7 | 6 | 2 | 3 |
| 40 | Bickacunda...... | பிக்கேகண்டே... | 6 | 8 | 3 | 5 | 9 | 11 | 4 | 3 | 20 | 7 | 5 | 4 | 10 | 8 | 2 | 3 |
| 41 | Solooroo........ | சோலூரு....... | 17 | 17 | 13 | 16 | 12 | 44 | 13 | 22 | 44 | 11 | 7 | 4 | 21 | 12 | 4 | 8 |
| 42 | Maikcoda........ | மேய்க்கோடே... | 6 | 7 | 3 | 4 | 6 | 4 | 2 | 3 | 12 | 8 | 6 | 2 | 8 | 8 | 2 | 4 |
| 43 | Kodutty. ....... | கோடட்டி...... | 7 | 9 | 4 | 7 | 3 | 4 | 2 | 2 | 16 | 12 | 4 | 3 | 8 | 9 | 2 | 5 |
| 44 | Oocoopolliam.... | உக்குப்பாளயம்.. | 19 | 19 | 15 | 17 | 5 | 22 | 3 | 12 | 26 | 18 | 6 | 4 | 17 | 19 | 2 | 5 |
| 45 | Abanadoo. ...... | யெப்பேநாடு.... | 11 | 13 | 17 | 10 | 7 | 9 | 5 | 7 | 24 | 24 | 9 | 7 | 12 | 14 | 4 | 8 |
| 46 | Maraygoodoo..... | மாரேகூடு...... | 5 | 5 | 2 | 3 | 2 | 12 | 1 | 4 | 4 | 2 | 1 | 0 | 2 | 7 | 2 | 4 |
| 47 | Cumbhutty....... | கமபட்டி....... | 3 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 1 | 1 | 4 | 1 | 3 |
| 48 | Coonooroo....... | குன்னூரு...... | 6 | 6 | 3 | 4 | 4 | 10 | 3 | 2 | 6 | 6 | 2 | 1 | 3 | 8 | 2 | 6 |
| 49 | Benthutty....... | பெநதட்டி...... | 7 | 8 | 4 | 6 | 2 | 6 | 2 | 4 | 4 | 6 | 2 | 3 | 2 | 10 | 3 | 6 |
| 50 | Ujjooroo........ | அச்சுரு....... | 7 | 7 | 3 | 4 | 4 | 3 | 2 | 1 | 12 | 4 | 2 | 2 | 4 | 10 | 1 | 5 |
| 51 | Theanhutty...... | தீனட்டி....... | 14 | 14 | 12 | 13 | 6 | 20 | 4 | 10 | 24 | 13 | 2 | 4 | 12 | 16 | 1 | 5 |
| 52 | Cuckoochoo...... | கக்கூசசு....... | 7 | 8 | 3 | 5 | 4 | 6 | 2 | 4 | 8 | 7 | 4 | 1 | 6 | 8 | 1 | 3 |
| 53 | Banahutty....... | பனேஅட்டி..... | 6 | 6 | 2 | 4 | 4 | 4 | 2 | 4 | 8 | 10 | 3 | 5 | 6 | 8 | 1 | 4 |
| 54 | Calyganutty..... | கலிக்கட்டி..... | 3 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 6 | 2 | 2 | 3 | 4 | 1 | 2 |
| 55 | Pygoola......... | பைகுளா....... | 4 | 5 | 2 | 4 | 0 | 0 | 0 | 0 | 6 | 5 | 2 | 1 | 3 | 5 | 1 | 2 |
| 56 | Thathervanoo.... | தாந்தர்வேனு... | 3 | 4 | 2 | 3 | 4 | 6 | 2 | 3 | 6 | 5 | 2 | 0 | 4 | 4 | 1 | 3 |
| 57 | Kookal.......... | கூக்கல்........ | 14 | 16 | 15 | 19 | 12 | 26 | 6 | 12 | 34 | 25 | 9 | 8 | 20 | 22 | 2 | 10 |
| 58 | Kookulthoray.... | கூக்கல்தோரே... | 26 | 29 | 10 | 13 | 6 | 30 | 6 | 10 | 20 | 80 | 9 | 13 | 10 | 30 | 2 | 12 |
| 59 | Ooelutty........ | உயிலட்டி...... | 15 | 16 | 18 | 19 | 6 | 19 | 7 | 14 | 18 | 8 | 3 | 3 | 9 | 12 | 2 | 6 |
| | Carried forward... | | 510 | 547 | 369 | 418 | 246 | 640 | 154 | 275 | 830 | 670 | 205 | 213 | 423 | 586 | 126 | 296 |

*Particulars of Burgher Villages in the Toda-naad Division, (continued.)*

| Registered No. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Brought forward, | 510 | 547 | 369 | 418 | 246 | 640 | 154 | 275 | 830 | 670 | 205 | 213 | 423 | 586 | 126 | 296 | |
| 60 | Potoocoray........ | பொட்டுக்கோரே | 7 | 9 | 4 | 6 | 6 | 8 | 4 | 2 | 16 | 6 | 2 | 2 | 8 | 10 | 2 | 6 | |
| 61 | Segoola.......... | சீகுளா......... | 8 | 10 | 4 | 8 | 8 | 18 | 4 | 6 | 22 | 6 | 2 | 4 | 10 | 14 | 2 | 8 | |
| 62 | Cooroomoody...... | குருமுடி........ | 6 | 6 | 4 | 4 | 8 | 10 | 4 | 6 | 20 | 4 | 3 | 2 | 9 | 10 | 2 | 6 | |
| 63 | Aloompatchinggooly | யெலும்பச்சங்குளி | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | In ruins. |
| 64 | Thagaley......... | தேகலி.......... | 6 | 6 | 4 | 6 | 4 | 6 | 1 | 1 | 8 | 4 | 1 | 1 | 4 | 8 | 1 | 4 | |
| 65 | Onaythlay........ | ஒனைதலே...... | 6 | 7 | 4 | 6 | 6 | 14 | 2 | 4 | 18 | 4 | 2 | 2 | 7 | 8 | 1 | 3 | |
| 66 | Ooroo............ | உளரு.......... | 3 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 4 | 2 | 1 | 1 | 2 | 4 | 1 | 3 | |
| 67 | Sodalaroo... .... | சொடலேரு..... | 3 | 5 | 2 | 3 | 2 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 4 | 1 | 2 | |
| | | (Toda-naad) Total.... | 549 | 592 | 395 | 453 | 280 | 698 | 169 | 294 | 920 | 697 | 217 | 225 | 465 | 644 | 136 | 328 | |

*Particulars of Burgher Villages in the Meykenaad Division.*

| Registered No. | English | Tamil | Adults Male | Adults Female | Children Male | Children Female | Buffaloes Male | Buffaloes Female | Calves Male | Calves Female | Cattle Male | Cattle Female | Calves Male | Calves Female | Ploughs | Houses | Breeding Huts | Cattle Pens | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Kaity............ | கேத்தி.......... | 10 | 8 | 5 | 6 | 2 | 7 | 1 | 2 | 10 | 12 | 3 | 5 | 5 | 12 | 4 | 3 | |
| 2 | Oolladah......... | உல்லாடா....... | 16 | 17 | 9 | 13 | 2 | 7 | 1 | 2 | 30 | 12 | 3 | 5 | 15 | 13 | 6 | 5 | |
| 3 | Ellanully........ | யெலலனள்ளி..... | 18 | 17 | 8 | 9 | 3 | 5 | 2 | 3 | 30 | 15 | 6 | 3 | 15 | 17 | 2 | 2 | |
| 4 | Kecketty......... | கெக்டடி........ | 10 | 12 | 10 | 5 | 0 | 0 | 0 | 0 | 16 | 12 | 3 | 6 | 8 | 10 | 2 | 2 | |
| 5 | Mokutty.......... | மொக்கட்டி..... | 2 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 2 | 1 | 6 | 1 | 2 | |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Colungarah. . . . . . | கோலங்கரு . . . . | 5 | 5 | 6 | 2 | 0 | 0 | 0 | 0 | 6 | 4 | 1 | 2 | 3 | 3 | 1 | 1 | |
| 7 | Manaputtoo . . . . . | மனப்பட்டு . . . . . | 2 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 2 | 1 | 5 | 1 | 1 | |
| 8 | Uchnakulloo. . . . . . | அச்சனக்கல்லு . . | 10 | 11 | 6 | 7 | 1 | 2 | 1 | 1 | 8 | 12 | 5 | 6 | 5 | 10 | 5 | 2 | |
| 9 | Keryadah . . . . . . | கிரைஆடா. . . . . | 20 | 21 | 17 | 19 | 8 | 11 | 7 | 8 | 20 | 40 | 10 | 11 | 10 | 20 | 6 | 7 | |
| 10 | Cummunthoo. . . . . | கம்மந்து . . . . . . | 5 | 6 | 4 | 5 | 0 | 0 | 0 | 0 | 6 | 4 | 2 | 3 | 3 | 5 | 1 | 1 | |
| 11 | Mail Oodirutty. . . . | மேல்உடையாட்டி | 11 | 9 | 6 | 9 | 4 | 4 | 2 | 3 | 12 | 15 | 8 | 9 | 7 | 10 | 4 | 3 | |
| 12 | Keil Oodirutty. . . . | கீள்உடையாட்டி | 3 | 4 | 3 | 5 | 1 | 1 | 1 | 1 | 4 | 6 | 2 | 2 | 2 | 4 | 1 | 2 | |
| 13 | Sogathooray . . . . . | சோகத்துரே. . . . | 9 | 10 | 5 | 7 | 2 | 3 | 1 | 2 | 12 | 12 | 6 | 3 | 6 | 9 | 3 | 5 | |
| 14 | Arenully. . . . . . . . | யேர்நள்ளி . . . . | 2 | 3 | 2 | 4 | 0 | 0 | 0 | 0 | 4 | 3 | 1 | 2 | 2 | 4 | 1 | 1 | |
| 15 | Kartary. . . . . . . . . | கார்ட்டேரி. . . . . | 25 | 30 | 15 | 16 | 2 | 6 | 2 | 3 | 30 | 30 | 10 | 12 | 16 | 25 | 6 | 7 | |
| 16 | Thoothutty . . . . . . | தூதட்டி. . . . . . | 5 | 5 | 3 | 6 | 0 | 0 | 0 | 0 | 8 | 9 | 4 | 5 | 4 | 5 | 2 | 1 | |
| 17 | Nadoovutty . . . . . . | நடுவட்டி. . . . . . | 4 | 4 | 3 | 5 | 0 | 0 | 0 | 0 | 6 | 6 | 2 | 3 | 3 | 4 | 1 | 1 | |
| 18 | Thoothooroo. . . . . . | தூதூரு. . . . . . . | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | In ruins. |
| 19 | Kodaroo. . . . . . . . . | கோடேரு. . . . . . | 4 | 5 | 3 | 2 | 0 | 0 | 0 | 0 | 6 | 4 | 2 | 3 | 3 | 4 | 1 | 2 | |
| 20 | Maungaudah . . . . . | மாணிஆடா . . . . | 4 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | |
| 21 | Athycarutty. . . . . . | அதிகாட்டி . . . . | 40 | 46 | 20 | 21 | 9 | 12 | 6 | 9 | 50 | 60 | 30 | 20 | 26 | 30 | 6 | 10 | |
| 22 | Aunyhutty. . . . . . . | அணிஅட்டி. . . . | 4 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 1 | 1 | |
| 23 | Mootynadoo. . . . . . | முட்டிநாடு. . . . . | 9 | 9 | 8 | 9 | 2 | 6 | 2 | 3 | 20 | 20 | 10 | 8 | 9 | 9 | 2 | 3 | |
| 24 | Thindooculloo . . . . | திண்டுகல்லு . . . . | 4 | 4 | 3 | 5 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 1 | 2 | |
| 25 | Thamutty . . . . . . . | தாமட்டி . . . . . . | 13 | 14 | 12 | 9 | 3 | 5 | 2 | 3 | 20 | 20 | 8 | 9 | 10 | 14 | 4 | 4 | |
| 26 | Keilooroo. . . . . . . . | கீளுரு. . . . . . . . | 2 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 1 | 2 | 1 | 1 | |
| 27 | Alatanay. . . . . . . . | ஆளட்டனே. . . . . | 4 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 2 | 1 | |
| 28 | Munjacumbay . . . . | மஞ்சகம்பே . . . . | 5 | 6 | 3 | 6 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 5 | 1 | 1 | |
| 29 | Kotheyvane. . . . . . | கோத்திவென். . . . | 2 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | |
| 30 | Vengulloo . . . . . . . | வெங்கலலு . . . . . | 4 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 1 | 1 | |
| 31 | Maincelay. . . . . . . | மயனிவே. . . . . . . | 6 | 6 | 3 | 2 | 1 | 2 | 1 | 1 | 4 | 4 | 2 | 1 | 2 | 5 | 1 | 1 | |
| | | Carried forward . . | 258 | 279 | 172 | 193 | 40 | 71 | 29 | 41 | 344 | 310 | 120 | 122 | 173 | 253 | 70 | 75 | |

*Particulars of Burgher Villages in the Meykenaad Division, (continued.)*

| Number. | Name of Village. | | Adults. | | Children. | | Buffaloes. | | Calves. | | Cattle. | | Calves. | | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | English. | Tamil. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | | | | |
| | | Brought forward, | 258 | 279 | 172 | 193 | 40 | 71 | 29 | 41 | 344 | 310 | 120 | 122 | 173 | 253 | 70 | 75 | |
| 32 | Thanaadoo ...... | தேநாடு ........ | 8 | 9 | 5 | 6 | 2 | 3 | 1 | 1 | 8 | 8 | 4 | 3 | 4 | 7 | 4 | 2 | |
| 33 | Mailooroo ....... | மேயஊரு ..... | 9 | 10 | 8 | 6 | 0 | 0 | 0 | 0 | 6 | 7 | 2 | 3 | 3 | 9 | 4 | 3 | |
| 34 | Osayhutty ...... | ஒசஅட்டி ..... | 6 | 6 | 5 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 7 | 1 | 1 | |
| 35 | Mailutty ........ | மேலட்டி...... | 4 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 1 | 2 | |
| 36 | Causolay ........ | காசாலேல் ..... | 4 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 1 | 1 | |
| 37 | Veckeecoodul .... | விக்கிகுட ....... | 19 | 19 | 18 | 16 | 2 | 10 | 2 | 3 | 16 | 20 | 9 | 8 | 8 | 18 | 4 | 3 | |
| 38 | Koodulhutty .... | குடலட்டி ..... | 5 | 5 | 3 | 2 | 0 | 0 | 0 | 0 | 8 | 4 | 2 | 3 | 4 | 5 | 0 | 1 | |
| 39 | Valacolay ....... | வாளக்குலே .... | 15 | 16 | 17 | 12 | 4 | 8 | 4 | 4 | 20 | 20 | 10 | 12 | 10 | 15 | 4 | 6 | |
| 40 | Meecaroo ...... | மீக்கேரு ...... | 12 | 10 | 9 | 10 | 2 | 5 | 2 | 3 | 20 | 20 | 5 | 8 | 10 | 11 | 4 | 5 | |
| 41 | Maunyhutty ..... | மணிஅட்டி .... | 30 | 30 | 20 | 25 | 4 | 7 | 4 | 5 | 30 | 40 | 10 | 12 | 15 | 30 | 4 | 7 | |
| 42 | Aulacoray ....... | ஆலக்கோரே .... | 5 | 5 | 3 | 4 | 1 | 1 | 1 | 0 | 8 | 6 | 2 | 3 | 4 | 5 | 0 | 3 | |
| 43 | Thunggadoo ..... | தங்காடு ....... | 8 | 9 | 5 | 7 | 1 | 2 | 1 | 1 | 16 | 17 | 8 | 3 | 8 | 9 | 4 | 3 | |
| 44 | Oornully ........ | ஒர்னள்ளி ...... | 20 | 20 | 10 | 12 | 2 | 4 | 2 | 1 | 20 | 30 | 10 | 8 | 10 | 20 | 4 | 5 | |
| 45 | Cunnary........ | கன்னேரி ...... | 7 | 8 | 3 | 5 | 0 | 0 | 0 | 0 | 10 | 12 | 4 | 2 | 5 | 7 | 1 | 2 | |
| 46 | Munthana....... | மந்தணே...... | 5 | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 8 | 6 | 2 | 3 | 4 | 5 | 1 | 1 | |
| 47 | Bembutty ....... | பெம்பட்டி .... | 8 | 8 | 3 | 6 | 1 | 2 | 1 | 1 | 10 | 12 | 4 | 6 | 5 | 8 | 1 | 2 | |
| 48 | Baitthaul........ | பேலதாள் ..... | 9 | 9 | 8 | 6 | 1 | 3 | 2 | 1 | 14 | 12 | 5 | 4 | 7 | 8 | 3 | 3 | |
| 49 | Uttabylee ....... | அட்டபயிலி .... | 6 | 6 | 3 | 2 | 2 | 4 | 2 | 3 | 8 | 10 | 4 | 3 | 4 | 6 | 2 | 4 | |
| 50 | Porthy.......... | போர்த்தி ..... | 8 | 9 | 6 | 3 | 1 | 5 | 1 | 3 | 10 | 12 | 8 | 3 | 5 | 8 | 1 | 3 | |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | Ethoolaroo | யித்துலாரு | 15 | 16 | 8 | 9 | 1 | 5 | 2 | 3 | 20 | 20 | 10 | 4 | 10 | 15 | 2 | 5 | |
| 52 | Poothoocutty | புதுக்கட்டி | 6 | 6 | 3 | 9 | 1 | 2 | 1 | 1 | 10 | 10 | 9 | 1 | 5 | 7 | 1 | 3 | |
| 53 | Ubboogoodoo | அப்புகூடு | 4 | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 6 | 2 | 1 | 3 | 4 | 4 | 1 | |
| 54 | Cullacoray | கல்லக்கோரே | 8 | 9 | 6 | 7 | 2 | 4 | 1 | 2 | 16 | 10 | 6 | 3 | 8 | 9 | 4 | 4 | |
| 55 | Otymarahutty | ஒட்டிமறஅட்டி | 9 | 9 | 8 | 9 | 0 | 0 | 0 | 0 | 10 | 12 | 4 | 5 | 5 | 8 | 2 | 2 | |
| 56 | Nonthal | நொனதாள் | 10 | 9 | 8 | 7 | 1 | 3 | 1 | 2 | 15 | 10 | 8 | 3 | 8 | 10 | 2 | 3 | |
| 57 | Thoolythalay | தூளிதலே | 5 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 6 | 6 | 2 | 1 | 3 | 5 | 3 | 1 | |
| 58 | Moothoogulloo | முதுகுல்லு | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 3 | 1 | |
| 59 | Oolyculloo | உளிக்கல்லு | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | |
| 60 | Caroocavada | கருக்கவடே | 6 | 6 | 3 | 4 | 1 | 1 | 1 | 1 | 6 | 4 | 1 | 2 | 3 | 6 | 1 | 3 | |
| 61 | Thaneylay | தேநிலே | 4 | 4 | 2 | 4 | 1 | 2 | 1 | 1 | 8 | 6 | 2 | 2 | 4 | 5 | 0 | 3 | |
| 62 | Jacolutty | சக்கோலட்டி | 3 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 4 | 6 | 2 | 2 | 2 | 4 | 0 | 1 | |
| 63 | Bunhutty | பன்னஅட்டிஊரு | 3 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 2 | 1 | 5 | 2 | 3 | |
| 64 | Mooloogooroo | முள்ளுகூரு | 15 | 17 | 6 | 8 | 3 | 8 | 2 | 4 | 16 | 6 | 2 | 2 | 6 | 10 | 3 | 3 | |
| 65 | Aurutty | ஆரட்டி | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | Building. |
| 66 | Munjooroo | மஞுகுரு | 10 | 12 | 4 | 6 | 2 | 8 | 2 | 4 | 8 | 4 | 2 | 2 | 4 | 11 | 4 | 5 | |
| 67 | Candhutty | கண்டட்டி | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | 3 | 2 | 3 | |
| 68 | Maunyculloo | மணிக்கல்லு | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 2 | 1 | 1 | |
| 69 | Thoonary | தூநேரி | 3 | 3 | 2 | 3 | 1 | 4 | 1 | 1 | 4 | 3 | 1 | 2 | 2 | 4 | 2 | 3 | |
| 70 | Mookeemalay | முக்கிமலே | 3 | 3 | 4 | 6 | 1 | 2 | 1 | 1 | 4 | 6 | 1 | 2 | 2 | 5 | 2 | 3 | |
| 71 | Koondinai | குண்டிநாய் | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | Building. |
| 72 | Keilkoontha Ooroo | கீள்குந்தேஊரு | 18 | 16 | 18 | 8 | 6 | 16 | 2 | 8 | 10 | 12 | 2 | 4 | 9 | 24 | 6 | 8 | |
| 73 | Madacundy | மடக்கண்டி | 4 | 2 | 3 | 2 | 1 | 3 | 1 | 1 | 4 | 6 | 1 | 2 | 2 | 6 | 2 | 3 | |
| 74 | Bauckoray | பாக்கோரே | 8 | 6 | 2 | 4 | 2 | 44 | 4 | 12 | 26 | 14 | 4 | 2 | 13 | 12 | 2 | 3 | |
| 75 | Keereamalay | கிரியமலே | 2 | 2 | 1 | 2 | 1 | 3 | 1 | 1 | 4 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | |
| 76 | Bukhutty | பக்கட்டி | 4 | 3 | 2 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 1 | 2 | 2 | 5 | 1 | 2 | |
| | Carried forward | | 598 | 623 | 402 | 429 | 88 | 234 | 74 | 111 | 763 | 698 | 272 | 253 | 385 | 613 | 165 | 199 | |

*Particulars of Burgher Villages in the Meykenaad Division, (continued.)*

| Number. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Brought forward. | 598 | 623 | 402 | 429 | 88 | 234 | 74 | 111 | 763 | 698 | 272 | 253 | 385 | 613 | 165 | 199 | |
| 77 | Adacadoo ....... | வெடக்காடு .... | 12 | 10 | 4 | 6 | 2 | 18 | 2 | 14 | 8 | 10 | 2 | 4 | 4 | 14 | 5 | 6 | |
| 78 | Soondutty. ....... | சுணட்டி..... | 10 | 8 | 6 | 4 | 2 | 16 | 4 | 12 | 10 | 10 | 2 | 4 | 5 | 12 | 5 | 6 | |
| 79 | Mailkoontha Ooroo. | மேல்குந்தேஉளரு | 8 | 6 | 4 | 5 | 2 | 8 | 2 | 4 | 16 | 10 | 2 | 6 | 7 | 12 | 3 | 4 | |
| 80 | Uttoomunnoo. .... | அட்டுமண்ணு... | 6 | 6 | 3 | 7 | 1 | 4 | 1 | 2 | 8 | 14 | 4 | 4 | 4 | 8 | 4 | 5 | |
| 81 | Koraypoddum .... | கிறயப்போடெமய | 4 | 4 | 2 | 3 | 2 | 6 | 1 | 3 | 6 | 6 | 2 | 2 | 3 | 6 | 3 | 4 | |
| 82 | Mooleymalay. .... | முள்ளிமலே..... | 5 | 6 | 4 | 3 | 1 | 3 | 0 | 2 | 6 | 3 | 1 | 1 | 3 | 7 | 2 | 3 | |
| 83 | Beccumboo ...... | பெக்கம்பு ..... | 2 | 2 | 0 | 3 | 1 | 2 | 1 | 0 | 4 | 2 | 1 | 1 | 2 | 4 | 2 | 3 | |
| 84 | Aresinggoo ...... | யேர்சிங்கு ..... | 2 | 1 | 1 | 4 | 0 | 2 | 0 | 1 | 2 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | |
| 85 | Gagegaputty ..... | கெச்சிகபட்டி... | 2 | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 4 | 2 | 1 | 1 | 2 | 3 | 1 | 2 | |
| 86 | Kinnakoray. ..... | கிண்ணக்கோரே. | 6 | 8 | 2 | 6 | 2 | 18 | 2 | 14 | 4 | 12 | 4 | 2 | 2 | 6 | 1 | 2 | |
| | | (Meykenaad) Total.. | 655 | 676 | 429 | 473 | 102 | 313 | 88 | 164 | 831 | 769 | 292 | 278 | 418 | 688 | 193 | 237 | |

*Particulars of Burgher Villages in Parungenaad Division.*

| Number. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Melythanoo ...... | மிளிதேணு...... | 28 | 22 | 26 | 23 | 2 | 10 | 2 | 3 | 20 | 35 | 8 | 7 | 13 | 28 | 3 | 6 | |
| 2 | Karevuttoo ...... | கேற்வட்டு ..... | 26 | 18 | 14 | 7 | 2 | 10 | 2 | 2 | 16 | 17 | 6 | 4 | 10 | 17 | 2 | 8 | |
| 3 | Osayhutty ....... | ஒசஅட்டி .... | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | |
| 4 | Cumbhuttythoray.. | கம்பட்டிதுரே .. | 15 | 12 | 9 | 6 | 0 | 4 | 0 | 0 | 6 | 12 | 4 | 5 | 3 | 12 | 4 | 5 | |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | Cumbhutty. . . . . | கம்பட்டி. . . . . | 12 | 11 | 7 | 5 | 1 | 5 | 0 | 1 | 7 | 15 | 4 | 6 | 4 | 11 | 3 | 5 | |
| 6 | Baircunny . . . . . | பேர்கன்னி . . . | 8 | 6 | 6 | 5 | 2 | 11 | 1 | 2 | 6 | 10 | 3 | 5 | 4 | 8 | 2 | 5 | |
| 7 | Munthyhutty. . . . | மந்திஅட்டு . . . | 6 | 4 | 2 | 0 | 1 | 5 | 2 | 4 | 4 | 8 | 2 | 1 | 2 | 5 | 2 | 3 | |
| 8 | Ivooroo. . . . . . . | அயஹுரு. . . . . | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 4 | 2 | |
| 9 | Kunnarymookoo. . | கன்னேரிமுக்கு. . | 18 | 14 | 10 | 6 | 4 | 1 | 0 | 0 | 8 | 14 | 3 | 6 | 4 | 14 | 2 | 7 | |
| 10 | Anihutty. . . . . . | அனைஅட்டி. . . | 5 | 4 | 3 | 2 | 7 | 2 | 1 | 0 | 2 | 4 | 1 | 1 | 1 | 5 | 2 | 2 | |
| 11 | Thimmutty. . . . . | திம்மட்டி. . . . | 18 | 15 | 9 | 7 | 2 | 0 | 0 | 0 | 6 | 14 | 4 | 3 | 3 | 17 | 4 | 5 | |
| 12 | Cadacodoo . . . . . | கடக்கோடு. . . . | 10 | 9 | 5 | 3 | 2 | 0 | 2 | 1 | 4 | 9 | 4 | 2 | 2 | 9 | 3 | 4 | |
| 13 | Araycumbay . . . . | அரகம்பை. . . . | 5 | 5 | 3 | 3 | 2 | 0 | 0 | 0 | 2 | 5 | 1 | 1 | 1 | 5 | 3 | 3 | |
| 14 | Poodyainggy. . . . | புடியெங்கி. . . . | 4 | 4 | 3 | 2 | 1 | 3 | 0 | 0 | 4 | 7 | 2 | 1 | 2 | 4 | 3 | 4 | |
| 15 | Koondadah. . . . . | குண்டாடா. . . | 12 | 9 | 6 | 4 | 0 | 0 | 0 | 0 | 4 | 14 | 3 | 2 | 2 | 12 | 4 | 4 | |
| 16 | Nadoongoolah . . . | நெடுங்குளா. . . | 23 | 20 | 10 | 9 | 2 | 6 | 1 | 3 | 14 | 24 | 10 | 6 | 5 | 23 | 6 | 13 | |
| 17 | Salacothy. . . . . . | செலக்கோதை . | 18 | 19 | 11 | 8 | 2 | 3 | 1 | 2 | 6 | 20 | 6 | 3 | 3 | 18 | 3 | 5 | |
| 18 | Soondutty . . . . . | சுண்டட்டி . . . | 15 | 13 | 9 | 5 | 2 | 16 | 0 | 5 | 8 | 15 | 3 | 1 | 3 | 15 | 3 | 7 | |
| 19 | Odanoo. . . . . . . | ஒடேனு . . . . . | 8 | 8 | 4 | 3 | 2 | 5 | 2 | 6 | 6 | 6 | 3 | 2 | 2 | 7 | 3 | 6 | |
| 20 | Poymoody . . . . . | பாயமுடி . . . . | 10 | 10 | 7 | 4 | 1 | 7 | 2 | 4 | 8 | 10 | 3 | 2 | 3 | 10 | 2 | 6 | |
| 21 | Ooloothutto . . . . | உல்லுதட்டு . . . | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 1 | |
| 22 | Calygarayooroo . . | களிகரோஊரு. . . | 18 | 18 | 12 | 9 | 3 | 15 | 4 | 4 | 16 | 14 | 5 | 4 | 9 | 16 | 3 | 9 | |
| 23 | Oroosolay . . . . . | ஒருசோலை . . . . | 19 | 17 | 11 | 6 | 2 | 12 | 10 | 7 | 13 | 16 | 6 | 4 | 8 | 18 | 4 | 8 | |
| 24 | Thanadoo . . . . . | தேநாடு . . . . . | 26 | 20 | 13 | 14 | 6 | 30 | 2 | 5 | 22 | 26 | 9 | 7 | 10 | 26 | 6 | 18 | |
| 25 | Thoonary . . . . . | தூநேரி. . . . . . | 12 | 10 | 6 | 4 | 4 | 13 | 2 | 2 | 8 | 8 | 3 | 3 | 4 | 11 | 2 | 10 | |
| 26 | Moothoorabaika . . | முத்தூர்பேக்கே . | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | Now building. |
| 27 | Thoombymala . . . | தும்பிமலே. . . . | 10 | 9 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 8 | 2 | 3 | 2 | 8 | 2 | 6 | |
| 28 | Mailhutty . . . . . | மேலட்டி. . . . . | 9 | 8 | 5 | 6 | 3 | 6 | 0 | 2 | 4 | 12 | 6 | 2 | 2 | 6 | 2 | 4 | |
| 29 | Kengaray . . . . . | கெங்கரே. . . . . | 12 | 11 | 7 | 6 | 1 | 10 | 1 | 3 | 2 | 15 | 4 | 3 | 2 | 12 | 2 | 5 | |
| 30 | Adaculloo . . . . . | அடக்கல்லு. . . . | 6 | 5 | 3 | 5 | 2 | 6 | 1 | 2 | 4 | 6 | 2 | 3 | 2 | 5 | 1 | 5 | |
| | Carried forward. . . . | | 363 | 318 | 209 | 160 | 56 | 90 | 37 | 53 | 175 | 330 | 145 | 90 | 95 | 307 | 124 | 136 | |

*Particulars of Burgher Villages in Parungenaad Division, (continued.)*

| Number. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Brought forward. | 363 | 310 | 209 | 160 | 56 | 90 | 37 | 53 | 178 | 330 | 145 | 90 | 95 | 307 | 124 | 130 | |
| 31 | Bungythuttoo | பங்கிதட்டு | 5 | 4 | 2 | 1 | 1 | 8 | 1 | 2 | 4 | 4 | 2 | 1 | 2 | 4 | 1 | 4 | |
| 32 | Kooneysolay | கூணிசோலை | 3 | 3 | 2 | 1 | 1 | 4 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 3 | 1 | 4 | |
| 33 | Soolloogoodoo | சுள்ளுகூடு | 13 | 10 | 4 | 6 | 2 | 12 | 2 | 4 | 8 | 16 | 6 | 5 | 4 | 10 | 1 | 8 | |
| 34 | Munjamabay | மஞ்சமலே | 5 | 3 | 2 | 1 | 1 | 6 | 1 | 3 | 2 | 6 | 3 | 1 | 1 | 4 | 1 | 4 | |
| 35 | Beathoocumbay | பீதுகம்பே | 6 | 4 | 4 | 3 | 1 | 9 | 1 | 0 | 4 | 8 | 3 | 4 | 2 | 5 | 1 | 5 | |
| 36 | Conacoray | கோணுட்களா | 31 | 30 | 16 | 31 | 1 | 10 | 2 | 1 | 18 | 20 | 5 | 6 | 12 | 30 | 4 | 15 | |
| 37 | Baitlandah | பெட்லாடா | 4 | 4 | 3 | 2 | 1 | 6 | 1 | 2 | 4 | 10 | 1 | 2 | 2 | 4 | 1 | 3 | |
| 38 | Jacanary | சக்கநாரி | 20 | 20 | 10 | 15 | 4 | 10 | 2 | 3 | 14 | 20 | 4 | 5 | 7 | 20 | 2 | 10 | |
| 39 | Mailhutty | மேலட்டி | 10 | 9 | 8 | 5 | 1 | 5 | 1 | 2 | 4 | 10 | 2 | 3 | 2 | 10 | 2 | 5 | |
| 40 | Keilhutty | கிளட்டி | 8 | 7 | 6 | 4 | 1 | 6 | 1 | 3 | 4 | 11 | 1 | 4 | 2 | 8 | 2 | 5 | |
| 41 | Jacatha | சக்கேதா | 10 | 9 | 7 | 5 | 1 | 10 | 2 | 3 | 10 | 20 | 2 | 3 | 5 | 14 | 2 | 9 | |
| 42 | Arayvanoo | அரவேனு | 18 | 12 | 6 | 3 | 1 | 6 | 1 | 2 | 4 | 10 | 1 | 3 | 2 | 10 | 1 | 5 | |
| 43 | Thoombooroo | தும்பூரு | 9 | 8 | 4 | 5 | 1 | 8 | 2 | 3 | 6 | 13 | 3 | 2 | 4 | 8 | 1 | 5 | |
| 44 | Bethutty | பெடஅட்டி | 5 | 3 | 3 | 4 | 1 | 6 | 1 | 2 | 4 | 10 | 2 | 1 | 2 | 9 | 1 | 5 | |
| 45 | Selvelah | செல்விளா | 5 | 3 | 2 | 3 | 1 | 3 | 1 | 2 | 4 | 8 | 2 | 3 | 2 | 4 | 3 | 3 | |
| 46 | Gasalahdu | கெசலாட | 8 | 6 | 3 | 4 | 2 | 7 | 2 | 1 | 4 | 9 | 1 | 4 | 2 | 8 | 1 | 3 | |
| 47 | Jacathal | சக்கேதாள் | 30 | 25 | 10 | 11 | 1 | 10 | 4 | 2 | 20 | 30 | 5 | 3 | 12 | 26 | 2 | 10 | |
| 48 | Bairlhutty | பேர்அட்டி | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 2 | 1 | 3 | 1 | 1 | |
| 49 | Otheygathutty | ஒதிகஅட்டி | 5 | 4 | 1 | 2 | 0 | 3 | 1 | 0 | 2 | 5 | 1 | 3 | 1 | 4 | 1 | 2 | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | Munjetho. . . . . | மஞ்சிதோ . . . . | 5 | 4 | 2 | 3 | 1 | 6 | 0 | 2 | 2 | 6 | 2 | 1 | 1 | 5 | 1 | 1 |
| 51 | Punthemay. . . . . | பந்திமே . . . . . | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 5 | 1 | 1 | 1 | 2 | 1 | 2 |
| 52 | Ooboothalay. . . . . | உப்புதலே . . . . | 13 | 13 | 3 | 4 | 1 | 5 | 1 | 1 | 4 | 10 | 1 | 2 | 2 | 12 | 1 | 2 |
| 53 | Coonnooroo. . . . . | குண்ணூரு. . . . | 10 | 11 | 6 | 4 | 1 | 6 | 1 | 2 | 8 | 20 | 2 | 3 | 4 | 10 | 1 | 4 |
| 54 | Bichutty. . . . . . . | பிக்கட்டி . . . . . | 12 | 11 | 5 | 6 | 1 | 6 | 1 | 0 | 12 | 20 | 2 | 3 | 6 | 12 | 1 | 6 |
| 55 | Bogunhutty. . . . . | பொகனடடி. . . | 10 | 9 | 3 | 4 | 1 | 8 | 1 | 2 | 4 | 10 | 1 | 2 | 2 | 10 | 2 | 3 |
| 56 | Adapulhy. . . . . . | யெடப்பள்ளி. . . | 30 | 30 | 12 | 14 | 2 | 22 | 3 | 3 | 10 | 20 | 5 | 3 | 4 | 30 | 8 | 10 |
| 57 | Eloothooray. . . . . | யிளுத்துறெ . . . | 25 | 22 | 9 | 10 | 1 | 21 | 1 | 3 | 8 | 20 | 4 | 4 | 4 | 20 | 2 | 7 |
| 58 | Arabettoo. . . . . . | அரபெட்டு. . . . | 5 | 4 | 2 | 2 | 1 | 10 | 1 | 1 | 2 | 10 | 1 | 2 | 1 | 5 | 1 | 2 |
| 59 | Beanutty. . . . . . | பீனட்டி . . . . . | 5 | 4 | 3 | 4 | 1 | 8 | 1 | 2 | 2 | 8 | 1 | 1 | 1 | 4 | 2 | 2 |
| 60 | Nadoovutty. . . . . | நடுவட்டி . . . . | 10 | 9 | 5 | 4 | 1 | 11 | 2 | 2 | 6 | 10 | 2 | 2 | 2 | 10 | 2 | 5 |
| 61 | Cuttabettoo. . . . . | கட்டபெட்டு. . . | 13 | 12 | 6 | 7 | 1 | 12 | 1 | 2 | 6 | 12 | 3 | 2 | 2 | 15 | 2 | 4 |
| 62 | Thogoolutty. . . . . | தொகுலடடி . . | 5 | 6 | 7 | 5 | 0 | 0 | 0 | 0 | 2 | 6 | 2 | 1 | 1 | 6 | 2 | 3 |
| 63 | Beppanoo. . . . . . | பெப்பேனு . . . | 13 | 10 | 6 | 5 | 1 | 10 | 2 | 1 | 2 | 10 | 1 | 3 | 1 | 8 | 1 | 2 |
| 64 | Alaycaroo. . . . . . | ஆளக்கேறு . . . | 3 | 2 | 2 | 1 | 1 | 12 | 1 | 2 | 2 | 10 | 1 | 2 | 1 | 3 | 1 | 2 |
| 65 | Kairoovanoo. . . . | கேருவேனு . . . . | 8 | 9 | 6 | 8 | 2 | 6 | 2 | 3 | 4 | 12 | 5 | 4 | 2 | 8 | 2 | 2 |
| 66 | Culhutty. . . . . . | கல்லடி . . . . . | 11 | 12 | 7 | 9 | 1 | 20 | 3 | 2 | 6 | 20 | 6 | 4 | 3 | 13 | 2 | 3 |
| 67 | Mailhutty. . . . . . | மேலடடி . . . . | 12 | 13 | 9 | 10 | 2 | 17 | 4 | 3 | 4 | 16 | 7 | 3 | 2 | 12 | 3 | 3 |
| 68 | Bethalem. . . . . . | பெததாளம். . . | 16 | 18 | 9 | 8 | 1 | 15 | 2 | 3 | 6 | 20 | 6 | 5 | 3 | 16 | 1 | 2 |
| 69 | Nadoovutty. . . . . | நடுவட்டி . . . . | 11 | 13 | 7 | 9 | 2 | 19 | 2 | 4 | 4 | 21 | 7 | 3 | 2 | 10 | 1 | 2 |
| 70 | Pyainggy. . . . . . | பய்யெங்கி . . . . | 4 | 5 | 5 | 3 | 1 | 12 | 2 | 3 | 2 | 8 | 2 | 2 | 1 | 4 | 1 | 2 |
| 71 | Mail Pyainggy. . . | மேலபய்யெங்கி. . | 3 | 4 | 2 | 3 | 1 | 10 | 1 | 2 | 2 | 9 | 3 | 1 | 1 | 4 | 2 | 3 |
| 72 | Cuttabettoo. . . . . | கட்டபெட்டி . . | 6 | 7 | 8 | 3 | 2 | 19 | 1 | 4 | 2 | 10 | 2 | 2 | 1 | 6 | 1 | 2 |
| 73 | Nadoovutty. . . . . | நடுவட்டி. . . . . | 6 | 10 | 8 | 7 | 1 | 12 | 2 | 3 | 4 | 12 | 3 | 2 | 2 | 10 | 1 | 2 |
| 74 | Alacegroo. . . . . . | ஆளக்கேறா . . . | 11 | 12 | 7 | 6 | 1 | 10 | 1 | 2 | 4 | 17 | 4 | 2 | 2 | 10 | 1 | 1 |
| | | (Parungenaad) Total . . | 813 | 729 | 445 | 390 | 107 | 586 | 100 | 146 | 436 | 885 | 227 | 204 | 225 | 760 | 155 | 351 |

## ABSTRACT.

| Number. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 67 | Burghers in. . . . | Todanaad. . . | 549 | 592 | 395 | 453 | 280 | 698 | 169 | 292 | 920 | 697 | 217 | 225 | 465 | 644 | 135 | 328 | |
| 86 | do. . . . | Meykenaad. . | 655 | 676 | 429 | 473 | 102 | 313 | 88 | 164 | 831 | 769 | 292 | 278 | 418 | 688 | 193 | 237 | |
| 74 | do. . . . | Parungenaad | 813 | 729 | 445 | 390 | 107 | 586 | 100 | 146 | 436 | 885 | 227 | 204 | 225 | 760 | 155 | 351 | |
| | | Total . . | 2017 | 1997 | 1269 | 1316 | 489 | 1597 | 357 | 602 | 2187 | 2351 | 736 | 707 | 1108 | 2092 | 483 | 916 | |

## THE KOTHERS.

| Number. | Name of Village. English. | Name of Village. Tamil. | Adults. Male. | Adults. Female. | Children. Male. | Children. Female. | Buffaloes. Male. | Buffaloes. Female. | Calves. Male. | Calves. Female. | Cattle. Male. | Cattle. Female. | Calves. Male. | Calves. Female. | No. of Ploughs. | No. of Houses. | No. of breeding Huts. | No. of Cattle Pens. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Badoogoolah. . . | படுகுளா. . . | 19 | 18 | 14 | 9 | 0 | 0 | 0 | 0 | 16 | 5 | 4 | 1 | 8 | 16 | 2 | 3 | |
| 2 | Theroochagady. . | திரிசசெகடி... | 26 | 28 | 19 | 18 | 0 | 0 | 0 | 0 | 12 | 7 | 4 | 2 | 6 | 18 | 2 | 5 | |
| 3 | Kotergherry. . . | கோததகிரி. . | 12 | 12 | 8 | 9 | 0 | 0 | 0 | 0 | 20 | 15 | 4 | 4 | 12 | 12 | 3 | 5 | |
| 4 | Keil Kotergherry | கிள்கோததகிரி | 9 | 8 | 4 | 5 | 0 | 0 | 0 | 0 | 6 | 12 | 2 | 3 | 4 | 9 | 4 | 5 | |
| 5 | Kallymalay. . . . | கொலவிமலே | 20 | 20 | 15 | 12 | 0 | 0 | 0 | 0 | 20 | 40 | 10 | 11 | 12 | 17 | 2 | 6 | |
| 6 | Kontha Kotergherry. . . . | குநதேகோத தகிரி . . . | 7 | 6 | 4 | 5 | 0 | 0 | 0 | 0 | 18 | 8 | 2 | 0 | 8 | 9 | 4 | 2 | |
| 7 | Goodaloor Kotergherry. . . . | குடலூரகோ தகிரி . . . | Situated below the plateau under Neddiwuttum.—Out of the map—account not taken. | | | | | | | | | | | | | | | | |
| | | Total. . | 93 | 92 | 64 | 58 | 0 | 0 | 0 | 0 | 92 | 87 | 26 | 21 | 50 | 81 | 17 | 26 | |

## THE ERULARS.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Syrul.......... | சீரல் .. .... | 4 | 3 | 4 | 5 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 4 | 1 | | |
| 2 | Mylaroo........ | மய்லேரு ... | 4 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 2 | | |
| 3 | Koocaroo.. .... | கூக்கேரு ... | 3 | 3 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | | |
| 4 | Echunggo ...... | ஈச்சபங்கோ. | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | | |
| 5 | Coonjapana. .... | குஞ்சப்பனை . | 9 | 9 | 6 | 5 | 6 | 0 | 0 | 0 | 3 | 5 | 2 | 1 | 9 | 1 | | |
| 6 | Velleery........ | வெளளிரி ... | 5 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 3 | 4 | 2 | 2 | 4 | 1 | | |
| 7 | Aracodoo.... .. | ஆரக்கோடு. . | 12 | 11 | 8 | 9 | 3 | 8 | 2 | 3 | 2 | 10 | 2 | 3 | 11 | 2 | | |
| 8 | Mullycuppay. ... | ம்ல்லிகொப்பை | 15 | 14 | 9 | 7 | 4 | 13 | 3 | 5 | 2 | 15 | 4 | 2 | 16 | 3 | | |
| 9 | Ooryketchy. .... | உரிக்கெச்சி. . | 5 | 5 | 2 | 3 | 1 | 5 | 1 | 2 | 1 | 6 | 1 | 2 | 5 | 2 | | |
| 10 | Cogeedah..... .. | கோகிடா ... | 16 | 17 | 5 | 6 | 2 | 12 | 2 | 3 | 2 | 12 | 2 | 3 | 16 | 1 | | |
| 11 | Covgeedah.. .... | கவகிடா .... | 5 | 4 | 1 | 3 | 1 | 5 | 1 | 2 | 1 | 4 | 1 | 0 | 5 | 2 | | |
| 12 | Nadoovooroo. ... | நடுஊரு. .. | 16 | 7 | 5 | 6 | 2 | 12 | 2 | 3 | 3 | 17 | 2 | 5 | 18 | 2 | | |
| 13 | Carapanay. ..... | கார்ப்பனை . . | 6 | 7 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | | |
| 14 | Neercoondy..... | நீர்குண்டி. .. | 9 | 8 | 3 | 5 | 1 | 6 | 1 | 2 | 1 | 10 | 1 | 3 | 9 | 2 | | |
| 15 | Malapooroo ..... | மலப்பூரு. .. | 4 | 8 | 4 | 3 | 1 | 4 | 1 | 2 | 3 | 6 | 1 | 2 | 5 | 4 | | |
| 16 | Erapanay ..... .. | ஈர்ப்பனை ... | 4 | 5 | 2 | 3 | 0 | 0 | 0 | 0 | 2 | 6 | 1 | 2 | 4 | 2 | | |
| 17 | Moolachuppay... | மூலசப்பை. . | 4 | 4 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 3 | 4 | 1 | | |
| 18 | Bawgapanay .... | பாகப்பனை... | 8 | 9 | 4 | 5 | 1 | 7 | 2 | 3 | 2 | 10 | 2 | 2 | 8 | 2 | | |
| 19 | Beathoocumb.... | பீதுகம்பே... | 2 | 2 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 4 | 1 | 2 | 2 | 2 | | |
| 20 | Chumbawnaray.. | சம்பானர். .. | 4 | 5 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | | |
| 21 | Mawvoolah .... | மாவுள். .... | 8 | 8 | 3 | 4 | 1 | 4 | 1 | 2 | 1 | 8 | 1 | 2 | 8 | 2 | | |
| 22 | Aravathy....... | ஆரவதி ..... | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | | |
| | | Total.. | 148 | 151 | 77 | 85 | 26 | 81 | 19 | 30 | 29 | 122 | 25 | 36 | 150 | 38 | | |

## ABSTRACT

*Of the Population of the Neilgherry Mountains.*

| Number of Villages or Munds. | Name of Tribe. | Adults. | | Children. | | Buffaloes. | | Calves. | | Bulls and Bullocks. | Cows. | Bull Calves. | Cow Calves. | Houses. | Ploughs. | Cattle Pens. | Total Souls of each Tribe. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | | | | | | | | | |
| 85 | Todars........ | 86 | 70 | 87 | 94 | 329 | 1418 | 158 | 366 | 0 | 0 | 0 | 0 | 209 | 0 | 91 | 337 | |
| 227 | Burghers...... | 2017 | 1997 | 1269 | 1316 | 489 | 1597 | 357 | 602 | 2187 | 2351 | 736 | 707 | 2092 | 1108 | 916 | 6599 | |
| 6 | Kothers ...... | 93 | 92 | 64 | 58 | 0 | 0 | 0 | 0 | 92 | 87 | 26 | 21 | 81 | 50 | 26 | 307 | |
| 22 | Erulars. .. .... | 148 | 151 | 77 | 85 | 26 | 81 | 19 | 30 | 29 | 122 | 25 | 36 | 150 | 0 | 38 | 461 | |
| 322 | GRAND TOTAL. . | 2344 | 2310 | 1497 | 1553 | 844 | 3096 | 534 | 998 | 2308 | 2560 | 787 | 764 | 2532 | 1158 | 1071 | 7704 | Souls. |

14—665—48.

in No. 396—48.

### SUMMARY.

| | Souls. |
|---|---|
| Europeans, | 342 |
| East Indians, | 154 |
| Hill Tribes, | 7,704 |
| Hindoos, Mussulmauns, Pariahs, &c., | 8,887 |
| Total Population of the Neilgherries.. | 17,087 |

J. OUCHTERLONY, Captain,
*Superintendent Neilgherry Survey.*

## METEOROLOGICAL

*Kept at the Survey Office*, Koterghery,

Maximum Pressure, observed at 9*h*. 50*m*. A. M.

| Days of the Month. | Barometer. | Temperature. Of the Mercury. | Temperature. Of the Air. | Temperature. Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. |
|---|---|---|---|---|---|---|
| 1 | 24·104 | 63·5 | ,, | 59·5 | Calm | Cloudy. |
| 2 | ·119 | 62·5 | 62·8 | 61· | Calm | Cloudy. |
| 3 | ·106 | 63· | 63·2 | 60·8 | Calm | Cum. strat. |
| 4 | ·112 | 62·8 | 62·5 | 61· | Calm | Cloudy drizzle. |
| 5 | ·134 | 62·5 | 62· | 59·8 | Calm | Clear. |
| 6 | ·134 | 62·5 | 61·2 | 58· | Calm | Cloudy. |
| 1848* | | | | | | |
| 7 | ·184 | 61· | 60·8 | 55·5 | ,, | Clear. |
| 8 | ·178 | 61· | 60·5 | 56·2 | N. E. | ,, |
| 9 | ·192 | 61·5 | 60· | 56· | N. W. | ,, |
| 10 | ·195 | 62·2 | 62·5 | 59·8 | ,, | ,, |
| 11 | ·200 | 62·5 | 62·8 | 58·2 | ,, | ,, |
| 12 | ·213 | 63·5 | 63·8 | 58·5 | Calm | Cloudy. |
| 13 | ,, | ,, | ,, | ,, | ,, | ,, |
| 14 | ,, | ,, | ,, | ,, | ,, | ,, |
| 15 | ·204 | 63·5 | 63·7 | 60· | Calm | Cirri cumuli. |
| 16 | ·211 | 63·5 | 63·2 | 60· | ,, | Clear. |
| 17 | ·198 | 64·5 | 64·9 | 61· | ,, | ,, |
| 18 | ·192 | 62· | 62·5 | 58· | ,, | ,, |
| 19 | ·188 | 62·3 | 63· | 58· | ,, | ,, |
| 20 | ·189 | 64·5 | 63·8 | 61· | ,, | ,, |
| 21 | ·189 | 64·5 | 65·2 | 61·5 | N. E. | Cumuli. |
| 22 | ·191 | 65· | 65·2 | 59·8 | N. E. | Clear. |
| 23 | ·187 | 62· | 62·5 | 59·8 | N. E. | ,, |
| 24 | ·176 | 63·8 | 65·8 | 61·8 | N. E. | ,, |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |

REGISTER

*for the Month of February,* $\frac{1847}{1848}$*

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| Barometer. | Temperature. | | | Wind. | Aspect of the Sky. | Rain. |
| | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | | Inches. |
| | | | | | | 1847 |
| 24·090 | 64· | 65·2 | 60·5 | Calm | Cloudy. | |
| ·091 | 63·8 | 64·8 | 61· | Calm | Cloudy. | ·61 |
| ·109 | 65·5 | 66·2 | 62· | Calm | Cloudy. | 1·40 |
| ·108 | 65·8 | 66·5 | 62·2 | Calm | Clear cumuli. | |
| ·139 | 65· | 65·8 | 61·2 | Calm | Clear. | |
| ·152 | 63·5 | 65· | 61· | North | Cloudy. | ·05 |
| ·175 | 65·5 | 67·5 | 60·8 | Calm | Clear. | ·26 |
| ·169 | 64· | 65·5 | 59·5 | ,, | ,, | |
| ·184 | 65·2 | 66·2 | 61·5 | N. W. | ,, | ·44 |
| ·191 | 66· | 68· | 62·5 | Calm | ,, | ·09 |
| ·194 | 65· | 67· | 61·5 | ,, | ,, | |
| ·190 | 65·2 | 66·9 | 61·3 | ,, | Cloudy. | 2·56 |
| ,, | ,, | ,, | ,, | ,, | Clear. | ·74 |
| ·197 | 68· | 70· | 64· | N. | ,, | 1·90 |
| ·197 | 66· | 67·7 | 62·5 | N. W. | ,, | 3·06 |
| ·194 | 66·7 | 68·2 | 63· | Calm | ,, | |
| ·184 | 66· | 68· | 63· | ,, | ,, | |
| ·187 | 65·5 | 67·5 | 62· | ,, | ,, | |
| ·175 | 66·5 | 68·5 | 63·2 | ,, | ,, | |
| ,, | ,, | 66·5 | ,, | N. E. | Cumuli. | |
| ·178 | 67·5 | 67·8 | 64·5 | N. E. | Cirri. | ·04 |
| ·183 | 67·2 | 69· | 63· | N. E. | Clear. | 1·74 |
| ·174 | 66·5 | 68· | ,, | N. E. | ,, | ·10 |
| ,, | ,, | ,, | ,, | ,, | ,, | ·03 |
| | | | | | Total rain... | 13·88 |
| | | | | | in 1848 ,, ,, ... | none. |

The rain register is all for 1847.

*March,*

| Maximum Pressure, observed at 9*h.* 50*m.* a. m. | | | | | | |
|---|---|---|---|---|---|---|
| | | Temperature. | | | Wind. | |
| Days of the Month | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. |
| 1 | ,, | ,, | ,, | ,, | ,, | ,, |
| 2 | 24·129 | 62·2 | 62·5 | 60·5 | Calm | Clear cumuli. |
| 3 | ·182 | 63·5 | 63·5 | 61·5 | Calm | Clear cumuli. |
| 4 | ·178 | 61· | 60· | 57·5 | N. W. | Clear cumuli. |
| 5 | ·191 | 62·5 | 62·2 | 59·8 | Calm | Clear cumuli. |
| 6 | ·181 | 61·2 | 61· | 57·5 | Calm | Clear cumuli. |
| 7 | ,, | ,, | ,, | ,, | ,, | ,, |
| 8 | ·187 | 62· | 62·5 | 58· | Calm | Clear cumuli. |
| 9 | ·192 | 62· | 62·8 | 59·5 | Calm | Clear cumuli. |
| 10 | ·190 | 65· | 64·5 | 60· | Calm | Clear cumuli. |
| 11 | ·171 | 65· | 64·6 | 61· | Calm | Clear cumuli. |
| 12 | ·180 | 66· | 65· | 63 5 | Calm | Clear cumuli. |
| 13 | ·187 | 63·8 | 64· | 60·8 | North | Clear cumuli. |
| 14 | ·161 | ,, | 63·2 | ,, | ,, | ,, |
| 15 | ·191 | 63·8 | 63·5 | 61· | Calm | Cloudy drizzle. |
| 16 | ·248 | 63·8 | 63·8 | 61·5 | Calm | Cloudy. |
| 17 | ·241 | 63·5 | 64· | 61· | South | Cloudy drizzle. |
| 18 | ·186 | 64· | 64· | 60·2 | S. W. | Clear. |
| 19 | ·180 | 64·2 | 64· | 61·5 | S. E. | Clear. |
| 20 | ·180 | 63·5 | 63· | 59·8 | South | Clear. |
| 21 | ,, | ,, | ,, | ,, | ,, | ,, |
| 22 | ·184 | 61·2 | 61·8 | 58·5 | S. E. | Cloudy. |
| 23 | ·176 | 63·8 | 64· | 59· | N. E. | Clear. |
| 24 | ·140 | 62·8 | 63·5 | 58·2 | East | Clear. |
| 25 | ·153 | 64·8 | 64· | 60·2 | N. E. | Clear. |
| 26 | ·158 | 63·8 | 64·5 | 61·8 | N. E. | Clear. |
| 27 | ·147 | 66·5 | 66· | 62·5 | N. E. | Clear. |
| 28 | ,, | ,, | ,, | ,, | ,, | ,, |
| 29 | ·146 | 65· | 65·8 | 59·2 | N. W. | Clear. |
| 30 | ·159 | 65·5 | 66·8 | 63·8 | N. E. | Clear. |
| 31 | ·171 | 67· | 66·5 | 63·5 | N. E. | Cum. strat. |

.847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| ,, | ,, | ,, | ,, | Calm | ,, | ,, |
| 4·160 | 61·8 | 66· | 62·5 | Calm | Calm, cloudy. | 2·00 |
| ·163 | 65· | 65·5 | 62·5 | North | Clear, cumuli. | |
| ·182 | 65· | 65·5 | 60·5 | Calm | Clear, cumuli. | |
| ·160 | 63· | 64·5 | 61· | Calm | Clear, cumuli. | |
| ·184 | 61·8 | 65·2 | 61· | N.W. | Clear, cumuli. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·185 | 65·8 | 67· | 64· | Calm | Clear, cumuli. | |
| ·185 | 65·5 | 67· | 64· | Calm | Clear, cumuli. | |
| ·184 | 69· | 70·5 | 64·2 | Calm | Clear, cumuli. | |
| ·180 | 68· | 69· | 63·5 | N.W. | Clear, cumuli. | |
| ·179 | 67· | 68· | 64· | Calm | Clear, cumuli. | |
| ·142 | 69· | 68· | 65·5 | Calm | Clear, cumuli. | 3·18 |
| ,, | ,, | 66·5 | ,, | ,, | ,, | |
| ·150 | 66·3 | 66·5 | 62·8 | Calm | Cloudy. | |
| ·225 | 65·2 | 65·8 | 62· | Calm | Cloudy. | ·48 |
| ·224 | 65· | 65·5 | 62· | South | Cloudy. | 1·02 |
| ·192 | 65·5 | 66·5 | 62·5 | S. E. | Clear. | ·20 |
| ·154 | 65·8 | 67· | 61·5 | S. E. | Clear. | |
| ·177 | 65·8 | 67· | 61· | S. W. | Clear. | |
| ,, | ,, | ,, | ,, | S. E. | ,, | |
| ·168 | 63·8 | 64·8 | 60·5 | N. E. | Cloudy. | |
| ·153 | 67· | 69· | 65· | N. E. | Clear. | |
| ·144 | 67· | 69· | 62· | N. E. | Clear. | |
| ·150 | 68· | 70· | 63· | N. E. | Clear. | |
| ·157 | 67· | 69· | 64· | N. E. | Clear. | |
| ·128 | 67·8 | 70· | 65· | N. E. | Cum. strat. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·137 | 67·2 | 70·5 | 62· | Calm | Cum. strat. | |
| ·147 | 67·8 | 69· | 63·5 | North | Clear. | |
| ·160 | 70·2 | 70· | 65·5 | N. E. | Cum. strat. | |
| | | | | | Total rain.. | 6·88 |

*April,*

| Maximum Pressure, observed at 9*h*. 50*m*. a. m. | | | | | | |
|---|---|---|---|---|---|---|
| | | Temperature. | | | Wind. | |
| Days of the Month. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. |
| 1 | 24·168 | 67·8 | 67·5 | 64· | N. E. | Clear, cumuli. |
| 2 | ·167 | 67·5 | 67·2 | 64·2 | N. E. | Clear, cumuli. |
| 3 | ·165 | 67·8 | 69· | 66· | S. E. | Cloudy, nimbi. |
| 4 | " | " | " | " | " | " |
| 5 | ·180 | 68· | 68·5 | 66· | South | Clear, cumuli. |
| 6 | ·175 | 67·8 | 67·5 | 65·5 | S. E. | Clear, cumuli. |
| 7 | ·178 | 67·5 | 67·8 | 66· | S. E. | Clear, cumuli. |
| 8 | ·173 | 68·5 | 68.5 | 66· | South | Clear, cumuli. |
| 9 | ·177 | 69·5 | 69· | 65·8 | S. E. | Clear, cumuli. |
| 10 | ·175 | 68· | 68·8 | 65·2 | South | Clear, cumuli. |
| 11 | " | " | " | " | " | " |
| 12 | ·159 | 68·2 | 68·5 | 65· | S. E. | Cloudy. |
| 13 | ·144 | 66· | 65·8 | 63·8 | S. E. | Cloudy. |
| 14 | ·140 | 66·5 | 66·8 | 64·5 | South | Cloudy, nimbi. |
| 15 | ·113 | 65· | 64·5 | 62· | Squally S. E. | Cloudy, mist, drizzle. |
| 16 | ·099 | 63·8 | 63·5 | 61· | Squally S. E. | Cloudy, mist, drizzle. |
| 17 | ·023 | 62·0 | 62·1 | 61·7 | Squally S. E. | Cloudy, mist, drizzle. |
| 18 | ·020 | 62·7 | 63· | 62· | High wind S. E. | Heavy rain. |
| 19 | ·049 | 64·2 | 64·5 | 62·2 | S. E. | Mist and rain. |
| 20 | ·104 | 64·5 | 65· | 62· | S. E. | Clear, cumuli. |
| 21 | ·130 | 64· | 64·8 | 61·5 | South | Clear, cumuli. |
| 22 | ·125 | 63·5 | 63·9 | 59· | S. W. | Clear, cumuli. |
| 23 | ·126 | 64· | 65· | 58·5 | South | Clear. |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |

1847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| 24·160 | 70·5 | 71· | 65· | N. E. | Cloudy, nimbi. | |
| ·160 | 71· | 73· | 67·5 | S. E. | Cloudy, nimbi. | |
| ·150 | 69·8 | 71·5 | 66· | South | Cloudy. | ·02 |
| " | " | " | " | " | " | |
| ·160 | 71·2 | 72·5 | 65·5 | S. E. | Clear, cumuli. | |
| ·171 | 71· | 73· | 44·5 | East | Clear, cumuli. | |
| ·170 | 71·5 | 73·2 | 67·2 | South | Clear, cumuli. | ·14 |
| ·166 | 71· | 72·5 | 66· | S. E. | Clear, cumuli. | ·24 |
| ·178 | 70· | 71·8 | 65·5 | South | Clear, cumuli. | |
| ·164 | 71· | 73· | 66· | South | Clear, cumuli. | |
| " | " | " | " | " | " | ·32 |
| ·134 | 71·2 | 73·5 | 66· | S. E. | Cum. strat. | 3·54 |
| ·133 | 68· | 69·5 | 65· | South high | Cloudy, mist. | ·10 |
| ·135 | 68· | 69· | 65· | S. E. | Cloudy, nimbi. | ·13 |
| ·101 | 63·8 | 63·5 | 61· | South | Cloudy, rain. | 1·84 |
| ·055 | 64· | 63·2 | 61·5 | Squally S. E. | Rain. | 3·97 |
| 23·992 | 63·2 | 63·2 | 61·8 | Stormy N. E. | Heavy rain. | 10·76 |
| 24·007 | 62·7 | 63· | 61·6 | S. E. | Mist and rain. | 1·50 |
| ·040 | 65·9 | 67· | 63·5 | S. W. | Cloudy, nimbi. | |
| ·114 | 67· | 69· | 64· | South | Cloudy and rain. | |
| ·126 | 49· | 69·8 | 65· | S. E. high | Clear. | |
| ·115 | 67·5 | 69· | 61·5 | N. W. | Clear. | |
| ·121 | 69· | 71· | 65·8 | N. W. | Clear. | |
| | | | | | Total rain.. | 18·56 |

*June,*

| Maximum Pressure, observed at 9*h*. 50*m*. a. m. | | | | | | |
|---|---|---|---|---|---|---|
| Days of the Month. | Barometer. | Temperature. | | | Wind. | Aspect of the Sky. |
| | | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | |
| 1 | 24·082 | ,, | ,, | ,, | Calm | ,, |
| 2 | ·109 | 64·5 | 66·5 | 64·5 | N. E. | Clear, cum. |
| 3 | ·102 | 65· | 66·2 | 63· | Calm | Cum. strati. |
| 4 | ·112 | 65· | 67· | 63· | ,, | Cumuli. |
| 5 | ,, | 66·5 | 67·5 | 64· | ,, | Cumuli. |
| 6 | ,, | ,, | ,, | ,, | ,, | ,, |
| 7 | ·104 | 65·2 | 66·5 | 63·5 | N. W. | Cumuli. |
| 8 | ·120 | 65·2 | 67· | 63· | ,, | Clear, cum. |
| 9 | ·103 | 64·7 | 66·2 | 62·5 | ,, | Cumuli. |
| 10 | ·083 | 64·9 | 66· | 63·9 | Calm | Cumuli. |
| 11 | ·074 | 66· | 66·5 | 63·5 | ,, | Cloudy. |
| 12 | ·060 | 63·5 | 64· | 61·5 | N. W. | Cloudy. |
| 13 | ,, | ,, | ,, | ,, | ,, | ,, |
| 14 | ·046 | 64·9 | 65·7 | 62· | N. W. | Cumuli. |
| 15 | ·036 | 64·2 | 64·7 | 61·7 | N. W. | Cloudy. |
| 16 | ·035 | 63· | 63·5 | 60·5 | N. W. | ,, |
| 17 | ·023 | 62·5 | 66·9 | 59· | N. W. | ,, |
| 18 | ·020 | 65·8 | 67·5 | 62· | Calm. | Cumuli. |
| 19 | ·043 | 66·2 | 63·5 | 64· | ,, | ,, |
| 20 | ,, | ,, | ,, | ,, | ,, | ,, |
| 21 | ·015 | 64·2 | 64·5 | 62· | N. W. | Cloudy, drizzle. |
| 22 | ·013 | 64·5 | 65· | 61·2 | N. W. | High. |
| 23 | 23·995 | 62·2 | 62·8 | 60·8 | N. W. | Squally. |
| 24 | ·986 | 63· | 64· | 61·2 | Calm | Cloudy. |
| 25 | 24·056 | 63·8 | 64·8 | 61·5 | N. W. | ,, |
| 26 | ·019 | 65·5 | 66·2 | 64· | N. W. | Nimbi. |
| 27 | ,, | ,, | ,, | ,, | ,, | ,, |
| 28 | 23·998 | 63·2 | 63·5 | 62· | N. W. | Cloudy. |
| 29 | ·984 | 63·8 | 64· | 62·5 | N. W. | Cloudy. |
| 30 | 24·014 | 65·5 | 67·7 | 63·5 | N. W. | Cumuli. |

1847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| 24·100 | 67·5 | 69·5 | 64· | N. W. | Cirri. | |
| ·098 | 68· | 71· | 65· | Calm | Cumuli. | |
| ·110 | 67· | 69· | 64·5 | S. W. | Cloudy, rain. | 0·26 |
| ·082 | 66· | 67· | 63· | N. W. | Cloudy. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·092 | 66· | 67· | 63· | N. W. | Cloudy. | |
| ·096 | 67· | 68·5 | 63·5 | N. W. | ,, | |
| ·083 | 66·7 | 69·5 | 64·5 | N. W. | Cumuli. | |
| ·068 | 67· | 70· | 64· | Calm | Cloudy. | |
| ·031 | 66· | 68· | 63·5 | N. W. | Cloudy. | |
| ·045 | 64·9 | 65· | 61·5 | N. W. | Cloudy. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·030 | 67· | 68·5 | 64· | N. W. | Clear, cum. | |
| ·027 | 66·2 | 66·5 | 63· | N. W. | Cloudy. | |
| ·029 | 64·5 | 64·3 | 60·5 | N. W. | ,, | |
| ·010 | 66·5 | 67·5 | 62· | N. W. | Cumuli. | |
| ·009 | 67·5 | 69· | 64· | N. E. | Cloudy. | |
| ·032 | 68·7 | 71· | 66· | N. W. | Cumuli. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·013 | 66·5 | 66·8 | 62· | N. W. | Overcast. | |
| 3·994 | 64·9 | 65·2 | 62· | N. W. | Cloudy. | 0·5 |
| ·975 | 63·5 | 63·8 | 60· | N. | ,, | 0·6 |
| ·983 | 64·5 | 65· | 62· | N. W. | ,, | 0·4 |
| ,, | 67· | 68· | 65· | N. W. | ,, | |
| 4·014 | 67· | 68· | 65· | N. W. | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| 3·981 | 63·9 | 63·9 | 61·7 | N. | Cloudy. | |
| ·983 | 65·5 | 65·5 | 62· | N. W. | ,, | |
| 4·004 | 67·5 | 69·2 | 65· | Calm | ,, | |
| | | | | | Total rain.. | 0·41 |

*July,*

| Maximum Pressure, observed at 9*h*. 50*m*. a. m. | | | | | | |
|---|---|---|---|---|---|---|
| Days of the Month. | Barometer. | Temperature. | | | Wind. | Aspect of the Sky. |
| | | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | |
| 1 | 24·038 | 64·5 | 65·9 | 62·5 | Calm | Cumuli. |
| 2 | ·031 | 65· | 66·5 | 63· | N. W. | Cloudy. |
| 3 | ·129 | 65·7 | 66·9 | 63·5 | ,, | ,, |
| 4 | ,, | ,, | ,, | ,, | ,, | ,, |
| 5 | ·025 | 65·5 | 66· | 64· | N. W. | ,, |
| 6 | ·039 | 65· | 66· | 61·8 | Calm | Cloudy, nimbi. |
| 7 | ·053 | 67· | 67·5 | 63·5 | N. W. | Cloudy. |
| 8 | ·058 | 66·8 | 67· | 63·2 | N. W. | Cloudy. |
| 9 | ·050 | 65· | 66·2 | 62· | Calm | Nimbi. |
| 10 | ·045 | 65·5 | 66· | 61·5 | N. | Clear, cum. |
| 11 | ,, | ,, | ,, | ,, | ,, | ,, |
| 12 | ·045 | 65·5 | 67· | 63· | N. W. | Clear, cum. |
| 13 | ·052 | 65· | 65·5 | 62·7 | N. W. | Cloudy. |
| 14 | ·033 | 64· | 64·8 | 61·5 | N. W. | Cloudy. |
| 15 | ·030 | 65·9 | 67·2 | 62· | N. W. | Clear, cum. |
| 16 | ·028 | 66·5 | 67· | 63·5 | N. W. | Cloudy. |
| 17 | ·030 | 65· | 66· | 62·5 | Calm | ,, |
| 18 | ,, | ,, | ,, | ,, | ,, | ,, |
| 19 | ·033 | 64·5 | 65· | 63· | N. W. | Cloudy. |
| 20 | ·030 | 66·2 | 67· | 63·5 | N. W. | Clear. |
| 21 | ·026 | 65·8 | 66·2 | 63· | Calm | Cloudy. |
| 22 | ·019 | 63·2 | 63·8 | 61·5 | N. W. | Squally, cloudy. |
| 23 | ·015 | 64·2 | 64·5 | 62·5 | N. | Cloudy. |
| 24 | 24·013 | 65·8 | 66·5 | 63· | Calm. | Misty, drizzle. |
| 25 | ,, | ,, | ,, | ,, | ,, | ,, |
| 26 | ·009 | 63·5 | 64· | 61·5 | N. W. | High. |
| 27 | ·001 | 64· | 64·5 | 61· | N. W. | Cloudy, misty. |
| 28 | ·002 | 65· | 66· | 62·5 | N. | Cloudy. |
| 29 | ·000 | 66· | 67· | 64· | Calm | ,, |
| 30 | ·025 | 65· | 65·5 | 63· | ,, | Misty. |
| 31 | ·024 | 61·5 | 64·8 | 65·2 | N. | Cloudy. |

847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| 4·019 | 67· | 69·9 | 64· | N. W. | Cloudy. | |
| ·021 | 68·5 | 69·9 | 65·7 | Calm. | „ | |
| ·017 | 67· | 68·2 | 65· | „ | „ | |
| „ | „ | „ | „ | „ | „ | |
| ·025 | 65· | 65·2 | 60·5 | N. W. | Light, cloudy. | |
| ·051 | 67·5 | 68· | 44·5 | N. W. | „ „ | ·41 |
| ·054 | 67·8 | 68·2 | 62·5 | N. W. | „ | |
| ·042 | 68·2 | 69·5 | 64· | N. W. | „ Clear, cum. | |
| ·028 | 69· | 70·5 | 66· | N. W. | „ Cirri strat. | ·20 |
| ·036 | 68·5 | 69·5 | 64· | N. W. | „ Cloudy, nimbi. | ·74 |
| „ | „ | „ | „ | „ | „ | |
| ·034 | 66·7 | 67·2 | 63·2 | S. W. | Cumuli. | |
| ·031 | 65·9 | 66·2 | 62·5 | N. W. | Cumuli. | |
| ·024 | 65·8 | 66·5 | 61·5 | N. | Cumuli. | |
| ·023 | 68·5 | 70·5 | 64·7 | N. W. | Clear, cum. | |
| ·047 | 67·2 | 67·5 | 64·5 | Calm. | Cloudy. | |
| ·030 | 67· | 68·5 | 64· | N. W. | Cumuli. | |
| „ | „ | „ | „ | „ | „ | |
| ·027 | 65·8 | 66·5 | 66·5 | N. W. | Cloudy. | |
| ·025 | 65· | 44·5 | 63· | N. | Cloudy. | |
| ·019 | 65·8 | 44· | 43· | N. W. | „ | |
| ·010 | 66·8 | 67·2 | 62·2 | N. | „ | ·29 |
| ·008 | 65·2 | 66·8 | 63·8 | N. E. | Cloudy, drizzle. | |
| ·000 | 67·8 | 48· | 64·5 | Calm. | Cloudy. | ·46 |
| „ | „ | „ | „ | „ | „ | |
| ·998 | 45· | 65·8 | 41·5 | W. | Cloudy. | |
| ·997 | 65· | 65·5 | 61·2 | N. W. | „ | |
| ·995 | 66·5 | 66· | 61·8 | Calm. | „ | |
| ·009 | 65·5 | 66·5 | 64· | „ | „ | 1·04 |
| ·010 | 64·2 | 44·5 | 61· | „ | „ | ·56 |
| ·017 | 44·8 | 47·5 | „ | N. W. | Light, clear, cum. | |
| | | | | | Total rain.. | 3·70 |

*August,*

| Days of the Month. | Barometer. | Temperature. Of the Mercury. | Temperature. Of the Air. | Temperature. Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. |
|---|---|---|---|---|---|---|
| | MAXIMUM PRESSURE, OBSERVED AT *9h. 50m.* A. M. | | | | | |
| 1 | 24·008 | ,, | ,, | ,, | ,, | ,, |
| 2 | ·008 | 65· | 65·7 | 63· | N. W. | Light, cloudy. |
| 3 | ·008 | 65· | 65· | 63· | ,, | ,, cloudy. |
| 4 | ·016 | 63·8 | 64·2 | 61·8 | ,, | ,, cloudy. |
| 5 | ,, | ,, | ,, | ,, | ,, | ,, |
| 6 | ·011 | 64·5 | ,, | 63· | N. W. | Cloudy. |
| 7 | ·006 | 64·5 | 64· | 66· | ,, | ,, |
| 8 | ,, | ,, | ,, | ,, | ,, | ,, |
| 9 | ·027 | 63· | 63·8 | 42· | ,, | Cloudy, nimbi. |
| 10 | ·047 | 64·8 | 65·2 | 42· | ,, | Clear, cumuli. |
| 11 | ·073 | 64·2 | 65·2 | 61·8 | ,, | Cloudy, nimbi. |
| 12 | ·086 | 63·8 | 64·2 | 61· | Calm | Cloudy, nimbi. |
| 13 | ·081 | 63·8 | 64· | 61·5 | ,, | Clear, cumuli. |
| 14 | ·066 | 62·5 | 62·8 | 60. | N. W. | High, cloudy. |
| 15 | ,, | ,, | ,, | ,, | ,, | ,, |
| 16 | ·058 | 64·5 | 66·2 | 62· | N. W. | Cumuli. |
| 17 | ·050 | 44·8 | 65·2 | 43· | N. W. | Light, clear. |
| 18 | ·080 | 65·7 | 65·9 | 64· | ,, | Cloudy. |
| 19 | ·077 | 63·9 | 64·5 | 61· | ,, | Light, cumuli. |
| 20 | ·081 | 64· | 64·9 | 61· | ,, | Clear, cum. |
| 21 | ·094 | 65· | 65· | 63· | ,, | Light, cloudy. |
| 22 | ,, | ,, | ,, | ,, | ,, | ,, |
| 23 | ·076 | 63· | 63·5 | 62· | Calm. | Cloudy. |
| 24 | ·072 | 63·8 | 64· | 62· | ,, | Clear, cum. |
| 25 | ·090 | 64·3 | 65· | 62·5 | N. W. | Cloudy. |
| 26 | ·083 | 63·5 | 63·8 | 61· | ,, | Clear. |
| 27 | ·081 | 63·2 | 63·5 | 61·5 | ,, | Cloudy and misty. |
| 28 | ·080 | 63·5 | 66·2 | 61·5 | ,, | Clear. |
| 29 | ,, | ,, | ,, | ,, | ,, | ,, |
| 30 | ·081 | 64·9 | 66·9 | 63· | ,, | Clear. |
| 31 | ·068 | 64·5 | 65· | 62·5 | ,, | Cloudy. |

347.

Minimum Pressure, observed at 4 p. m.

| Barometer. | Temperature. Of the Mercury. | Temperature. Of the Air. | Temperature. Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. | Rain. Inches. |
|---|---|---|---|---|---|---|
| ,, | ,, | ,, | ,, | ,, | ,, | |
| 3·987 | 66· | 66· | 63· | N. W. | Light, Cloudy. | ·30 |
| ·999 | 66· | 63·5 | 63·5 | ,, | Cloudy. | |
| 4·001 | 66· | 64·5 | 64· | ,, | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·006 | 66· | 65·7 | 63·5 | ,, | ,, | |
| 3·991 | 64·9 | 64·5 | 61·9 | ,, | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| 1·014 | 65· | 65·5 | 62· | N. W. | High, cloudy. | |
| ·043 | 65·5 | 66· | 63· | N. | ,, cloudy. | |
| ·067 | 64·8 | 65· | 62· | N. W. | Cloudy, drizzle. | |
| ·081 | 66·5 | 68· | 63· | N. W. | Cloudy. | |
| ·070 | 65·5 | 66· | 62· | ,, | ,, | |
| ·052 | 64·8 | 65· | 61· | ,, | ,, | ·42 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·060 | 67· | 68·5 | 64· | N. W. | Cumuli. | |
| ·063 | 67·5 | 68·5 | 64· | ,, | ,, | |
| ·077 | 67· | 67· | 63·5 | ,, | Cloudy. | |
| ·073 | 67·4 | 68·8 | 64·1 | N. W. | Clear, cumuli. | |
| ·080 | 68· | 70· | 65· | ,, | Light, clear, cum. | |
| ·084 | 67· | 67·5 | 64·9 | Calm | Cloudy. | |
| ,, | ,, | ,, | ,, | ,, | ,, | 1·84 |
| ·074 | 66·8 | 66·8 | 62·5 | Calm | Cloudy. | ·10 |
| ·068 | 65·2 | 65·2 | 62· | N. W. | Light, cloudy. | |
| ·076 | 66· | 66· | 63· | Calm | Cloudy, drizzle. | |
| ·070 | 67·2 | 67·2 | 62·8 | N. W. | Light, clear. | |
| ·072 | 67·5 | 67·5 | 63· | ,, | Clear, cumuli. | |
| ·067 | 68·5 | 67· | 63· | ,, | Cloudy, misty. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·064 | 66·5 | 67·5 | 64· | N. W. | Cloudy. | |
| ·054 | 67·2 | 68·5 | 64· | ,, | Cloudy. | |
| | | | | | Total rain . . | 2·66 |

*September,*

Maximum Pressure, observed at $9h.$ $50m.$ a. m.

| Days of the Month. | Barometer. | Temperature. | | | Wind. | Aspect of the Sky. |
|---|---|---|---|---|---|---|
| | | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | |
| 1 | 24·066 | 65· | 66·5 | 63· | N. W. | Cloudy. |
| 2 | ·079 | 65· | 66·2 | 63·5 | ,, | Clear, cumuli. |
| 3 | ·085 | 65·9 | 66·3 | 62·5 | ,, | Cloudy. |
| 4 | ·077 | 64·9 | 65·3 | 62· | ,, | Cloudy. |
| 5 | ,, | ,, | ,, | ,, | ,, | ,, |
| 6 | ·058 | 62· | 63· | 60· | N. W. | High, clear. |
| 7 | ·022 | 62·9 | 63·9 | 60·9 | ,, | ,, cloudy. |
| 8 | ·004 | 63·5 | 64·2 | 61· | ,, | Clear, cumuli. |
| 9 | 23·991 | 63·5 | 64· | 61· | ,, | ,, |
| 10 | 24·020 | 65·2 | 65·5 | 62·5 | ,, | ,, |
| 11 | 24·025 | 65· | 65·8 | 62·5 | W. | ,, |
| 12 | ,, | ,, | ,, | ,, | ,, | ,, |
| 13 | ·027 | 64·5 | 65·5 | 61·5 | W. | Clear, cumuli. |
| 14 | ·035 | 66· | 67· | 63·2 | N. W. | Light, cloudy. |
| 15 | ·047 | 66·5 | 67· | 64· | Calm. | Cloudy, |
| 16 | ·035 | 66·5 | 66·9 | 64· | N. W. | Light, cloudy. |
| 17 | ·055 | 66· | 66·5 | 64· | Calm | ,, |
| 18 | ·052 | 64·5 | 64·9 | 62· | N. W. | Light, clear. |
| 19 | ,, | ,, | ,, | ,, | ,, | ,, |
| 20 | ·105 | 62·5 | 63· | 60·8 | Calm | Cloudy, nimbi. |
| 21 | ·101 | 63·2 | 63·5 | 61·5 | N. W. | Light. |
| 22 | ·080 | 63·5 | 64· | 62·2 | ,, | ,, clear, cum. |
| 23 | ·126 | 60·5 | 64· | 62· | Calm | Cumuli strati. |
| 24 | ·109 | 61·7 | 61·7 | 57·5 | ,, | Cloudy. |
| 25 | ·100 | 63·8 | 63· | 62·7 | N. W. | Light, cumuli. |
| 26 | ,, | ,, | ,, | ,, | ,, | ,, |
| 27 | ·101 | 64· | 64·7 | 62· | Calm | Cloudy. |
| 28 | ·096 | 64· | 63·5 | 62· | ,, | ,, |
| 29 | ·158 | 64· | 64·2 | 61·9 | N. W. | ,, |
| 30 | ·102 | 64· | 64·7 | 60·5 | ,, | Light, cumuli. |

1847.

Minimum Pressure, observed at 4 p. m.

| Barometer. | Temperature. Of the Mercury. | Of the Air. | Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. | Rain. Inches. |
|---|---|---|---|---|---|---|
| 24·066 | 67·7 | 68·7 | 65· | N. W. | Cumuli. | |
| ·070 | 67· | 67·8 | 65· | ,, | Cloudy. | |
| ·076 | 67·5 | 68·2 | 65· | ,, | ,, | |
| ·175 | 67·2 | 68·2 | 65· | N. | Clear, cum. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·024 | 65· | 65·2 | 42· | N. W. | Cloudy. | |
| 23·999 | 64·5 | 64·9 | 61· | ,, | ,, | |
| ·987 | 66·2 | 68· | 63·5 | ,, | Nimbi. | |
| ·992 | 67·8 | 48·9 | 64· | ,, | Clear, cum. | |
| 24·000 | 66·8 | 68· | 63· | ,, | Cloudy. | |
| ·000 | 67· | 68 | 63·5 | N. | ,, | |
| ,, | ,, | ,, | ,, | N. W. | Clear, cum. | |
| ·011 | 67·5 | 68·8 | 63· | N. W. | ,, | |
| ·021 | 68·2 | 66·9 | 64· | ,, | Cumuli. | |
| ·042 | 67·5 | 67·7 | 64· | ,, | ,, | |
| ·043 | 67·7 | 68·5 | 64· | ,, | ,, | |
| ·035 | 66·5 | 66·9 | 63·5 | ,, | ,, | |
| ·111 | 66·2 | 67·7 | 63· | ,, | Clear, cumuli. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·115 | 67· | 68· | 65· | Calm | ,, | |
| ·099 | 67· | 67·5 | 66·5 | ,, | Cloudy. | ·21 |
| ·083 | 67·8 | 68·5 | 64·8 | ,, | ,, | 1·01 |
| ·086 | 67· | 67·5 | 61·5 | N. W. | Clear, cumuli. | |
| ·097 | 65· | 67·5 | 62· | ,, | ,, | |
| ·098 | 64·5 | 61·7 | 61· | ,, | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·086 | 66·5 | 67·7 | 63·5 | Calm | Cloudy, nimbi. | 0·14 |
| ·077 | 66·9 | 67·2 | 63·5 | ,, | Cloudy. | |
| ·183 | 66·2 | 66·5 | 63·5 | ,, | ,, | |
| ·067 | 66·7 | 68·5 | 64· | N. W. | Cumuli. | |
| | | | | | Total rain . . | 1·36 |

*October,*

| Days of the Month. | Barometer. | Temperature. Of the Mercury. | Temperature. Of the Air. | Temperature. Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. |
|---|---|---|---|---|---|---|
| Maximum Pressure, observed at 9*h*. 50*m*. a. m. | | | | | | |
| 1 | 24·069 | 64· | 66· | 60· | N. W. | Lt. clear cumuli. |
| 2 | 0·85 | 64·7 | 65·7 | 62·2 | ,, | ,, cumuli. |
| 3 | ,, | ,, | ,, | ,, | ,, | ,, |
| 4 | ·101 | 65·5 | 66·2 | 63· | Calm | Cloudy. |
| 5 | ·137 | 66·2 | 66· | 64· | ,, | Cumuli. |
| 6 | ·120 | 64·2 | 64·5 | 61· | N. W. | Lt. clear cumuli. |
| 7 | ·128 | 63·5 | 63·8 | 61·5 | Calm | Clear. |
| 8 | ·138 | 64·2 | 64·5 | 62· | ,, | ,, |
| 9 | ,, | ,, | ,, | ,, | ,, | ,, |
| 10 | ,, | ,, | ,, | ,, | ,, | ,, |
| 11 | ·141 | 63·2 | 63·5 | 61·8 | Calm | Cloudy. |
| 12 | ·131 | 65· | 65· | 63· | ,, | Cumuli. |
| 13 | ·125 | 65·5 | 65·9 | 63· | ,, | Cloudy. |
| 14 | ·092 | 61·5 | 61·8 | 60·5 | N. E. | Cloudy drizzle. |
| 15 | ·049 | 62· | 62·2 | 60·5 | ,, | Cloudy. |
| 16 | ·061 | 62·5 | 62·8 | 61· | N. E. | Heavy mist & driz. |
| 17 | ,, | ,, | ,, | ,, | ,, | ,, |
| 18 | ·103 | 63·5 | 64·2 | 62·5 | Calm | Cloudy mist. |
| 19 | ·080 | 64·2 | 66·5 | 62·5 | ,, | Cloudy. |
| 20 | ·131 | 64·8 | 64·5 | 62· | ,, | ,, |
| 21 | ·151 | 64·3 | 64·3 | 62·5 | ,, | ,, |
| 22 | ·169 | 64· | 64·2 | 62· | ,, | ,, |
| 23 | ·171 | 65· | 64·2 | 62· | Calm | Misty. |
| 24 | ·159 | ,, | ,, | ,, | ,, | ,, |
| 25 | ·166 | 64·5 | 64·2 | 62·9 | ,, | Cumuli. |
| 26 | ·158 | 64·5 | 65· | 63· | ,, | Cloudy. |
| 27 | ·156 | 65· | 65·2 | 63·7 | ,, | Cumuli. |
| 28 | ·121 | 64·7 | 64·9 | 63·9 | N. E. | Cumuli. |
| 29 | ·121 | 61·2 | 62· | 59· | ,, | ,, |
| 30 | | | | | | |
| 31 | | | | | | |

1847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| 24·059 | 65·2 | 66·5 | 61·5 | N. W. | Lt. clear cumuli. | |
| ·070 | 65·8 | 66·8 | 63·5 | Calm | Cloudy. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·125 | 67·2 | 68·5 | 65· | ,, | ,, | 0·54 |
| ·119 | 67·8 | 68· | 65·5 | ,, | Cumuli. | ·22 |
| ·097 | 64· | 66·2 | 63·5 | ,, | Cloudy. | |
| ·112 | 65·5 | 65·8 | 62·5 | N. W. | Clear. | ·18 |
| ,, | ,, | ,, | ,, | ,, | ,, | ·53 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·099 | 67· | 68·5 | 64·5 | Calm | Cloudy. | ·50 |
| ·114 | 68·5 | 70· | 66· | ,, | ,, | ·82 |
| ·091 | 65·9 | 65·9 | 62· | ,, | ,, | ·14 |
| ·020 | 60· | 59·3 | 57· | N. E. | ,, | ·82 |
| ·034 | 65· | 65·5 | 63·5 | Calm | ,, | ·16 |
| ·059 | 66·9 | 68·7 | 64· | ,, | Cumuli. | ·16 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·073 | 65·8 | 66·2 | 63·8 | ,, | Cloudy. | ·08 |
| ·081 | 67·2 | 68· | 66·2 | ,, | ,, | ·85 |
| ·113 | 66·2 | 66·5 | 64· | ,, | ,, | ·88 |
| ·131 | 64·3 | 64·5 | 62· | Calm | Dense mist. | |
| ·142 | 66·5 | 67·2 | 64· | ,, | Cloudy. | ·20 |
| ·145 | 66·7 | 67·5 | 66·5 | ,, | ,, | 4·34 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·131 | 66·3 | 66·7 | 64· | ,, | ,, | ·30 |
| ·134 | 66·5 | 67· | 64·5 | ,, | ,, | |
| ·126 | 67·5 | 68·9 | 65· | ,, | Cumuli. | ·09 |
| ·125 | 65·5 | 64·5 | 61·5 | N. E. | Lt. Cloudy. | |
| ·123 | 64· | 65· | 61· | ,, | Cumuli. | ·42 |
| | | | | | | ·24 |
| | | | | | | ·86 |
| | | | | | Total rain.. | 12·33 |

*November*

| Maximum Pressure, observed at 9*h.* 50*m.* a. m. | | | | | | |
|---|---|---|---|---|---|---|
| | | Temperature. | | | Wind. | |
| Days of the Month. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. |
| 1 | 24·150 | 63·5 | 64· | 61· | N. E. | Light, cloudy, fog. |
| 2 | ·141 | 62·2 | 62·5 | 60· | N. E. | Cloudy, mist. |
| 3 | ·139 | 62· | 62·2 | 60· | ,, | Heavy mist and rain. |
| 4 | ·140 | 63·9 | 64· | 62·5 | Calm | Clear, cumuli. |
| 5 | ·168 | 64·2 | 64·5 | 61·8 | ,, | Cloudy. |
| 6 | ·160 | 63· | 63·5 | 62· | ,, | Cloudy. |
| 7 | ,, | ,, | ,, | ,, | ,, | ,, |
| 8 | ·131 | 63· | 63·9 | 62· | Calm | Cloudy. |
| 9 | ·135 | 61·5 | 62·5 | 60· | ,, | Cloudy. |
| 10 | ·135 | 62·3 | 62·3 | 60· | N. E. | Light, cumuli. |
| 11 | ·154 | 63· | 63· | 61· | ,, | Light, cumuli. |
| 12 | ·161 | 62·5 | 62·8 | 60·9 | Calm | Cloudy, drizzle. |
| 13 | ·155 | 63·2 | 63·2 | 61· | ,, | Cloudy. |
| 14 | ,, | ,, | ,, | ,, | ,, | ,, |
| 15 | ·157 | 59·8 | 60· | 58· | N. E. | Clear, cumuli. |
| 16 | ·140 | 57· | 56·5 | 53· | ,, | Clear. |
| 17 | ·133 | 59·5 | 59·8 | 56·5 | Calm | ,, |
| 18 | ·138 | 60·5 | 61·5 | 57·5 | Calm | Clear, cumuli. |
| 19 | ·151 | 62· | 62·5 | 60 5 | Calm | Cloudy. |
| 20 | ·145 | 62·5 | 62·9 | 60·5 | ,, | Cloudy. |
| 21 | ,, | ,, | ,, | ,, | ,, | ,, |
| 22 | ·148 | 62·5 | 62·5 | 60· | N. E. | Light, clear. |
| 23 | ·150 | 61·8 | 62·5 | 60· | Calm | Cloudy. |
| 24 | ·153 | 63·2 | 64·2 | 61·2 | ,, | Clear, cum. |
| 25 | ·153 | 64· | 64·5 | 62· | ,, | Cloudy. |
| 26 | ·157 | 63·5 | 63·9 | 62· | ,, | ,, |
| 27 | ·150 | 64·7 | 64·7 | 62·7 | ,, | Cumuli. |
| 28 | ,, | ,, | ,, | ,, | ,, | ,, |
| 29 | ·144 | 64·2 | 44·2 | 62· | Calm | Cumuli. |
| 30 | ·151 | 64· | 44·2 | 62· | ,, | Clear, cum. |
| 31 | | | | | | |

1847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| 24·132 | 64· | 64· | 61· | Calm. | ,, | 1·93 |
| ·133 | 65· | 66· | 62·8 | ,, | ,, | 1·08 |
| ·081 | 63· | 63·2 | 61·5 | N. E. | High. | 1·75 |
| ·133 | 66·5 | 66· | 63·5 | Calm. | ,, | 1·06 |
| ·158 | 66·2 | 66·5 | 63· | ,, | ,, | ·30 |
| ·134 | 64· | 65·2 | 62·5 | Clr. E. | Cloudy, drizzle. | 0·43 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·105 | 64·5 | 65·2 | 62· | Calm | Cumuli. | |
| ·120 | 63· | 63·7 | 60· | ,, | Cloudy. | |
| ·124 | 64· | 65· | 62· | N. E. | Light, cumuli. | |
| ·141 | 65·3 | 66·9 | 63· | ,, | Light, cloudy. | |
| ·144 | 64· | 66·5 | 62· | Calm | Cloudy. | ·47 |
| ·152 | 64·2 | 64·5 | 62· | ,, | Heavy mist. | |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·145 | 62·5 | 63· | 59· | N. E. | Clear, cum. | |
| ·120 | 62·2 | 63·5 | 53·8 | N. E. | Light, clear. | |
| ·111 | 61·8 | 63· | 58·5 | Calm | Cloudy. | |
| ·129 | 63·5 | 65· | 60·5 | N. E. | Light, cumuli. | |
| ·140 | 63· | 66·8 | 60·8 | Calm | Cloudy. | |
| ·128 | 63·9 | 62·7 | 60· | N. E. | Rain. | ·14 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·132 | 64·5 | 66· | 62· | Calm | Clear, cum. | |
| ·146 | 64·5 | 65·5 | 62· | ,, | Cloudy. | ·41 |
| ·131 | 65· | 66·3 | 63·5 | ,, | Cloudy, drizzle. | ·92 |
| ·130 | 65·5 | 66·5 | 64· | ,, | Cloudy. | ·12 |
| ·131 | 65·5 | 66·2 | 64· | ,, | ,, | |
| ·132 | 65·7 | 66· | 64· | ,, | Cumuli. | ·94 |
| ,, | ,, | ,, | ,, | ,, | ,, | |
| ·132 | 66·5 | 66·5 | 63·5 | Calm | Cloudy. | ·51 |
| ·130 | 65· | 65·5 | ,, | ,, | Cloudy. | ·19 |
| | | | | | | ·37 |
| | | | | | Total rain . . | 10·62 |

*December,*

MAXIMUM PRESSURE, OBSERVED AT 9*h*. 50*m*. A. M.

| Days of the Month. | Barometer. | Temperature. Of the Mercury. | Of the Air. | Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. |
|---|---|---|---|---|---|---|
| 1 | 24·138 | 61· | 61·2 | 58·2 | ...... | Calm, mist and rain. |
| 2 | ·126 | 62·2 | 62·5 | 61· | ...... | Calm, cloudy. |
| 3 | ·108 | 62·5 | 62·8 | 60·5 | ...... | N. E. rain. |
| 4 | ·101 | 62·8 | 63· | 60·2 | ...... | Calm, cloudy. |
| 5 | ,, | ,, | ,, | ,, | ,, | ,, |
| 6 | ·129 | 62·8 | 62· | 61· | ...... | Calm, cloudy, drizzle. |
| 7 | ·136 | 62·7 | 62·2 | 61· | ...... | N. E. cumuli. |
| 8 | ·132 | 62·5 | 62· | 61· | ...... | Calm, cloudy. |
| 9 | ·134 | 62· | 62· | 60· | ...... | ,, |
| 10 | ·080 | 57·2 | 58· | 51· | ...... | N. E. cumuli. |
| 11 | ·070 | 58·5 | 59· | 56· | ...... | N. E. clear. |
| 12 | ,, | ,, | ,, | ,, | ,, | ,, |
| 13 | ·196 | 58·9 | 59·5 | 57· | ...... | N. E. cloudy. |
| 14 | ·194 | 59·5 | 59·8 | 57·8 | ...... | Calm, cloudy, mist. |
| 15 | ·046 | 58·9 | 59· | 58· | ...... | ,, clear, cumuli. |
| 16 | ·081 | 59· | 69·5 | 57·8 | ...... | ,, nimbi. |
| 17 | ·063 | 59·5 | 60·2 | 55· | ...... | ,, cloudy, mist. |
| 18 | ·080 | 61·5 | 62· | 59· | ...... | ,, cloudy. |
| 19 | ,, | ,, | ,, | ,, | ,, | ,, cloudy. |
| 20 | ·125 | 62·5 | 62·2 | 61· | ...... | ,, cumuli. |
| 21 | ·137 | 62·5 | 62·7 | 61· | ...... | ,, cloudy, drizzle. |
| 22 | ·134 | 63· | 62·7 | 61· | ...... | ,, cumuli. |
| 23 | ·137 | 61·5 | 61· | 57·8 | ...... | ,, cumuli. |
| 24 | ·136 | 58·5 | 57·7 | 55·5 | ...... | ,, ,, |
| 25 | ,, | ,, | ,, | ,, | ,, | ,, ,, |
| 26 | ,, | ,, | ,, | ,, | ,, | ,, ,, |
| 27 | ·135 | 59·5 | 59·5 | 57·8 | Calm | Cloudy. |
| 28 | ·140 | 59· | 60· | 58·8 | N. E. | Clear, cumuli. |
| 29 | ·181 | 59·2 | 59·5 | 57·7 | Calm | Cloudy. |
| 30 | ·175 | 59·5 | 59·8 | 57· | ,, | Clear. |
| 31 | | | | | | |

1847.

Minimum Pressure, observed at 4 p. m.

| Barometer. | Temperature. Of the Mercury. | Temperature. Of the Air. | Temperature. Of the Wet Bulb. | Wind. Direction. | Aspect of the Sky. | Rain. Inches. |
|---|---|---|---|---|---|---|
| ·119 | 65· | 65·5 | 62·5 | N. E. | Lt. Clear. | ·01 |
| ·090 | 63·9 | 63·5 | 61·5 | Calm | Cloudy. | ·53 |
| ·085 | 63·5 | 63·8 | 61· | N. E. | Lt. Cloudy. | ·35 |
| ·077 | 64·5 | 64·8 | 62· | Calm | Cloudy. | 2·56 |
| " | " | " | " | " | " | ·64 |
| ·125 | 64·5 | 63·7 | 62· | Calm | Cloudy, drizzle. | ·21 |
| ·122 | 64·5 | 65· | 62·5 | N. E. | Lt. cumuli. | |
| ·137 | 64·5 | 64·2 | 62· | Calm. | Cloudy. | |
| ·118 | 63·9 | 65· | 61· | " | Cloudy. | |
| ·053 | 59· | 60· | 53· | N. E. Lt. | Cumuli. | |
| ·051 | 58·5 | 60· | 52·8 | N. E. Lt. | Clear. | |
| " | " | " | " | " | " | ·99 |
| ·016 | 60· | 60· | 57· | N. E. Lt. | Cloudy. | ·19 |
| ·005 | 60·2 | 60·5 | 58·5 | Calm | Cloudy, mist. | ·03 |
| ·034 | 62· | 63· | 60·5 | " | Clear, cumuli. | |
| ·059 | 62·5 | 63· | 60·5 | " | Nimbi. | ·21 |
| ·062 | 63· | 64· | 61·8 | " | Cloudy, mist. | ·59 |
| ·077 | 64· | 65· | 62·8 | " | Cloudy. | ·76 |
| " | " | 65·2 | " | " | " | 1·00 |
| ·130 | 64·5 | 64· | 62· | Calm | Cumuli. | |
| ·126 | 63·9 | 65·2 | 62· | " | Cloudy, drizzle. | ·07 |
| ·128 | 65· | 62· | 63· | " | Cloudy. | |
| ·123 | 62·5 | 62· | 60· | " | Cumuli. | |
| " | " | " | " | " | " | |
| " | " | " | " | " | " | |
| " | " | " | " | " | " | |
| ·126 | 61·8 | 62· | 59·8 | " | Cloudy. | 1·01 |
| ·135 | 60·5 | 61· | 58·8 | N. E. Lt. | Clear, cumuli. | ·42 |
| ·180 | 61·8 | 62·5 | 60 | Calm | Cloudy. | |
| ·148 | 62·5 | 63· | 61·8 | " | Clear. | |
| | | | | | Total rain . . | 9·57 |

METEOROLOGICAL

*(January, 1847.)* *Kept at the Survey Office.*

| Maximum Pressure, observed at 9*h*. 50*m*. a. m. | | | | | | |
|---|---|---|---|---|---|---|
| Days of the Month. | Barometer. | Temperature. | | | Wind. | Aspect of the Sky. |
| | | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | |
| 1 | ” | ” | ” | ” | ” | Squally. |
| 2 | 24·252 | 60· | 60·5 | 57· | N. W. | Nearly mid. |
| 3 | ” | ” | ” | ” | Slight North | ” |
| 4 | 24·214 | 61·2 | 61·5 | 58· | N. W. | Clear cumuli. |
| 5 | ·205 | 55·8 | 57· | 54·5 | Slight North | Clear cumuli. |
| 6 | ” | ” | 56· | 53·6 | Calm | Clear cumuli. |
| 7 | ” | ” | 58· | 55·8 | N. W. | Clear cumuli. |
| 8 | ·232 | 61· | 59· | 57· | N. W. | Clear cumuli. |
| 9 | ·167 | 57·3 | 57·5 | 54· | Calm | Clear cumuli. |
| 10 | ” | ” | ” | ” | ” | ” |
| 11 | ·160 | 16·0 | 57·2 | 54·5 | Calm | Clear cumuli. |
| 12 | ·151 | 55·8 | 56· | 52· | Calm | Clear cumuli. |
| 13 | ·169 | 58· | 59· | 54· | Calm | Clear. |
| 14 | ·160 | 58·2 | 58·5 | 53·5 | Calm | Clear. |
| 15 | ·169 | 58·2 | 58·5 | 55· | Calm | Clear. |
| 16 | ·169 | 58·5 | 58·2 | 55·5 | Calm | Clear. |
| 17 | ” | ” | ” | ” | ” | ” |
| 18 | ·160 | 58·2 | 58·5 | 54·5 | N. W. | Clear. |
| 19 | ·170 | 56·5 | 56·8 | 53·5 | North | Clear. |
| 20 | ·160 | 57·6 | 57·8 | 54· | North | Clear. |
| 21 | ·160 | 59· | 59·2 | 55·5 | Calm | Clear. |
| 22 | ·159 | 59·2 | ” | 56· | North | Clear. |
| 23 | ·158 | 59·8 | ” | 56· | Calm | Clear. |
| 24 | ·160 | 59·5 | ” | 56· | Calm | Clear. |
| 25 | ·144 | 58·2 | ” | 53·5 | Calm | Clear. |
| 26 | ·106 | 61·5 | ” | 55·8 | Calm | Clear. |
| 27 | ·102 | 61·5 | ” | 56· | Calm | Clear. |
| 28 | ·123 | 62·5 | ” | 58·5 | Calm | Clear. |
| 29 | ·107 | 64·8 | ” | 62·5 | Calm | Clear. |
| 30 | ·099 | 63·8 | ” | 61· | Calm | Clear. |
| 31 | ” | ” | ” | ” | ” | ” |

REGISTER,

Kotergherry, *for the Year* 1847.

| Minimum Pressure, observed at 4 p. m. | | | | | | |
|---|---|---|---|---|---|---|
| | Temperature. | | | Wind. | | Rain. |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction. | Aspect of the Sky. | Inches. |
| ” | ” | ” | ” | ” | ” | ·30 |
| 24·200 | 61·5 | 61·8 | 58·2 | Squally North | Heavy mist. | ·41 |
| ” | ” | ” | ” | ” | ” | 1·04 |
| ·201 | 61·2 | 62·5 | 59·2 | Slight North | Clear cumuli. | |
| ·185 | 60·5 | 62·2 | 58·5 | Calm | Clear cumuli. | |
| ” | ” | 62·8 | 58·5 | Calm | Clear cumuli. | |
| ” | ” | 63·5 | 57·5 | N. W. | Clear cumuli. | |
| ·150 | 61· | 63· | 56· | Calm | Clear cumuli. | |
| ·140 | 62·5 | 63·8 | 58· | Calm | Clear cumuli. | |
| ” | ” | ” | ” | ” | ” | |
| ·155 | 64· | 66· | 59· | Calm | Clear cumuli. | |
| ·153 | 63·8 | 65·8 | 59· | Calm | Clear. | |
| ·168 | 64·5 | 66· | 61· | Calm | Clear. | |
| ·158 | 64· | 65· | 58· | Calm | Clear. | |
| ·157 | 63·5 | 65·5 | 58·5 | Calm | Clear. | |
| ” | ” | ” | ” | ” | ” | |
| ” | ” | ” | ” | ” | ” | |
| ·159 | 61·2 | 62·5 | 56·5 | Slight North | Clear. | |
| ·166 | 62·2 | 63·2 | 58· | N. W. | Clear. | |
| ·145 | 63·5 | 64·8 | 59·5 | Calm | Clear. | |
| ·143 | 63·8 | ” | 56· | Calm | Clear. | |
| ·153 | 64· | ” | 58· | North | Clear. | |
| ·154 | 63· | ” | 58· | Calm | Clear. | |
| ·158 | 64·5 | ” | 59· | Calm | Clear. | |
| ·120 | 62· | ” | 59· | Calm | Clear. | |
| ·080 | 67·8 | ” | 61· | Calm | Clear. | |
| ·090 | 66·8 | ” | 61· | Calm | Clear. | |
| ·087 | 68·8 | ” | 66· | Calm | Clear. | |
| ·103 | 68·8 | ” | 62· | Calm | Clear. | |
| ·078 | 67·5 | ” | 60· | Calm | Clear. | |
| ” | ” | ” | ” | ” | ” | |
| | | | | | Total rain . . | 1·7 |

*Meteorological Register kept at the Survey Office,*

| Days of the Month. | At Sunrise. Barometer. | At Sunrise. Temperature. Of the Mercury. | At Sunrise. Temperature. Of the Air. | At Sunrise. Temperature. Of the Wet Bulb. | At Sunrise. Direction of Wind about 6 A. M. | Maximum Pressure, at 9h. 50m. A. M. Barometer. | Maximum Pressure. Temperature. Of the Mercury. | Maximum Pressure. Temperature. Of the Air. | Maximum Pressure. Temperature. Of the Wet Bulb. | Maximum Pressure. Direction of Wind. | At Apparent Noon. Barometer. | At Apparent Noon. Temperature. Of the Mercury. | At Apparent Noon. Temperature. Of the Air. | At Apparent Noon. Temperature. Of the Wet Bulb. | At Apparent Noon. Direction of Wind. | Aspect of the Sky at Noon. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | ° | ° | | | ° | ° | ° | | | ° | ° | ° | | |
| 1 | 23·037 | 55· | 53·5 | 52·5 | W.S.W. | 23·059 | 61· | 60·5 | 58· | S. W. | 23·113 | 66·75 | 67· | 62· | Calm | Cloudy, cumuli. |
| 2 | ·067 | 56· | 53· | 52· | Calm | ·101 | 62·5 | 62· | 60· | ,, | ·104 | 64· | 64·5 | 63· | ,, | ,, nimbi. |
| 3 | ·103 | 56·3 | 56· | 55· | ,, | ·130 | 62· | 61·4 | 59· | ,, | ·117 | 65·75 | 66·25 | 62· | ,, | ,, cumuli. |
| 4 | ·095 | 57· | 54· | 53·5 | ,, | ·138 | 61· | 60·7 | 58· | ,, | ·111 | 64·5 | 64·5 | 60·5 | ,, | Cumuli, strati. |
| 5 | ·071 | 56·2 | 54· | 54· | N. W. | ·113 | 60·5 | 60·2 | 57· | ,, | ·112 | 64·2 | 63·7 | 60· | N. | ,, ,, |
| 6 | ·051 | 55· | 53· | 52· | Calm | ·087 | 62·5 | 61· | 54· | ,, | ·092 | 65·5 | 62·75 | 57· | Calm | ,, ,, |
| 7 | ·001 | 56· | 52· | 51· | ,, | ·012 | 58· | 57·8 | 55· | W. | ·003 | 59·6 | 60· | 56· | S. W. | Mist and rain. |
| 8 | ·020 | 53· | 51·8 | 50· | W. | ·038 | 58·5 | 58·6 | 54·2 | ,, | ·014 | 61·5 | 61·75 | 57· | ,, | Cumuli. |
| 9 | ·047 | 55· | 52· | 52· | Calm | ·111 | 64· | 62·5 | 59· | Calm | ·113 | 66·75 | 65·5 | 60· | Calm | Cum. & nimbi. |
| 10 | ·081 | 51·5 | 51·4 | 50·5 | ,, | ·136 | 61·5 | 60·2 | 56· | ,, | ·131 | 64·75 | 65·75 | 59· | ,, | ,, ,, |
| 11 | ·048 | 54· | 52· | 51·5 | ,, | ·236 | 66·7 | 61·5 | 57· | ,, | ·161 | 68·5 | 70·25 | 59· | S. W. | ,, ,, |
| 12 | ·111 | 54·5 | 51· | 48· | ,, | ·143 | 65·5 | 66·5 | 56·5 | ,, | ·155 | 73·3 | 73·5 | 59· | Calm | ,, and strati. |
| 13 | ·093 | 57· | 54· | 53· | ,, | ·139 | 65·3 | 67· | 58·5 | ,, | ·137 | 66·5 | 67·5 | 60·5 | ,, | Cloudy. |
| 14 | ·130 | 54· | 53· | 52·5 | ,, | ·194 | 69· | 65· | 61·7 | N. E. | ·173 | 67· | 65· | 61·5 | S. W. | Cumuli. |
| 15 | ·151 | 58· | 55·5 | 55· | ,, | ·155 | 64·6 | 61·8 | 60· | Calm | ·176 | 66·5 | 70·25 | 62·75 | Calm | Cloudy. |
| 16 | ·159 | 57· | 55· | 54· | ,, | ·169 | 64·5 | 61·5 | 59·7 | ,, | ·154 | 62· | 65· | 61· | ,, | Drizzle. |
| 17 | ·154 | 54· | 51· | 49· | ,, | ·178 | 63·5 | 61·25 | 61· | ,, | ·189 | 68·5 | 72·75 | 65· | ,, | Nimbi. |
| 18 | ·160 | 53· | 49·5 | 48· | ,, | ·182 | 62·75 | 66· | 58· | ,, | ·184 | 67·5 | 72·5 | 64· | ,, | Cum. & nimbi. |
| 19 | ·131 | 50·7 | 50· | 49· | ,, | ·159 | 64·75 | 66·75 | 61· | ,, | ·156 | 65· | 64·5 | 60·5 | ,, | Cloudy. |
| 20 | ·103 | 56·2 | 55· | 53· | ,, | ·130 | 63·99 | 61·99 | 60· | ,, | ·129 | 66·99 | 65·25 | 61· | ,, | Cum. & nimbi. |
| 21 | ·104 | 56·5 | 55·2 | 53·5 | ,, | 22·986 | 60·5 | 61·4 | 60·2 | ,, | ·002 | 61·7 | 62·8 | 60·2 | ,, | Cumuli. |
| 22 | ·133 | 58·0 | 57·8 | 54·8 | ,, | 23·160 | 62·75 | 61·25 | 59· | ,, | ·150 | 65·5 | 64· | 59·5 | ,, | Cloudy. |
| 23 | ·098 | 58·75 | 58·75 | 55·9 | ,, | ·122 | 65·5 | 63·25 | 61· | ,, | ·112 | 68· | 66· | 63·25 | ,, | ,, nimbi. |
| 24 | ·043 | 55· | 54· | 53·6 | ,, | ·102 | 64· | 61· | 60·75 | ,, | ·098 | 67·5 | 62·25 | 61· | ,, | Clear, cumuli. |
| 25 | ·084 | 57· | 55· | 54· | ,, | ·136 | 62· | 60·5 | 61· | ,, | ·133 | 67· | 63·5 | 63· | ,, | Clear, ,, |
| 26 | 22·980 | 58· | 55· | 53·6 | ,, | ·083 | 65·75 | 62· | 63· | ,, | ·064 | 67·75 | 67·75 | 61·5 | ,, | Cloudy, nimbi. |
| 27 | ·980 | 60· | 56·0 | 54·5 | ,, | ·150 | 75·25 | 64·25 | 63·75 | ,, | ·137 | 68· | 66·25 | 63· | ,, | Clear, cum. |
| 28 | ·981 | 61· | 58· | 56·5 | ,, | 22·982 | 62·8 | 63·5 | 62·4 | N. E. | 22·986 | 63· | 65·3 | 63·5 | E. | Cumuli. |
| 29 | ·960 | 57·5 | 56·9 | 55· | ,, | 23·160 | 62·80 | 62·1 | 60·3 | Calm | 23·151 | 66·9 | 65·2 | 62· | Calm | Cum. & nimbi. |
| 30 | ·958 | 57·7 | 56·6 | 54·6 | N. E. | ·121 | 64·5 | 63·5 | 60· | ,, | 22·129 | 67·5 | 66·5 | 60·75 | ,, | ,, |

*Ootacamund, for the Month of September,* 1845.

| AT 2*h.* 40*m.* | | | | | MINIMUM PRESSURE, AT 4*h.* P. M. | | | | | AT SUNSET. | | | | | RAIN GUAGE. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TEMPERATURE. | | | | | TEMPERATURE. | | | | | TEMPERATURE. | | | | |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Inches. |
| | ° | ° | ° | | | ° | ° | ° | | | ° | ° | ° | | |
| 23·105 | 66·5 | 67· | 66· | N. E. | 23·112 | 62·5 | 65· | 62· | W. | 23·118 | 59·5 | 63· | 57· | W. | |
| ·093 | 63· | 64·5 | 61· | Calm | ·092 | 64·3 | 65·5 | 60· | Calm | ·095 | 59·5 | 62· | 58· | Calm | |
| ·117 | 63· | 65· | 61· | ,, | ·097 | 62·4 | 64· | 60·5 | ,, | ·101 | 59· | 62·5 | 58· | S. W. | |
| ·004 | 67·3 | 67· | 62· | N. E. | ·099 | 67· | 67·6 | 62· | N. W. | ·081 | 60·5 | 63· | 58·5 | W. | |
| ·085 | 67· | 67·5 | 60· | N. W. | ·078 | 66·5 | 66·8 | 60·5 | ,, | ·091 | 60· | 65· | 59· | N. | |
| ·077 | 70·5 | 68·5 | 58· | ,, | ·025 | 63·8 | 58·5 | 57·5 | N. | ·082 | 59·5 | 61·3 | 56· | W. | |
| 22·990 | 58·5 | 59·5 | 56 5 | W. | 22·971 | 57· | 66·5 | 56· | S. W. | 22·977 | 56·5 | 56·5 | 53·5 | S. | ·04 |
| ·032 | 64·25 | 64· | 57·75 | N. N. | 23·032 | 67· | 64· | 57·5 | N. W | 23·020 | 55·5 | 59· | 54· | Calm | |
| ·090 | 63·75 | 65· | 61· | Calm | ·053 | 62· | 63· | 59· | Calm | ·047 | 56·7 | 61· | 56· | ,, | |
| ·102 | 63·75 | 65·5 | 59· | ,, | ·100 | 63· | 64·7 | 58· | ,, | ·105 | 58·5 | 61·2 | 57·2 | ,, | |
| ·120 | 65·5 | 66·5 | 59· | ,, | ·095 | 64·3 | 66·2 | 58· | ,, | ·093 | 58·5 | 62· | 55· | ,, | |
| ·092 | 65·5 | 67·7 | 61· | ,, | ·089 | 65· | 63·5 | 61· | ,, | ·080 | 60·5 | 63·5 | 59· | ,, | |
| ·126 | 68· | 67·5 | 64·3 | S. W. | ·104 | 63·4 | 64· | 59· | W. | ·098 | 60·2 | 62· | 57· | S. W. | |
| ·161 | 67· | 68· | 65·4 | W. | ·124 | 63·5 | 64· | 61· | S. W. | ·085 | 60· | 61·7 | 57· | Calm | |
| ·147 | 65·5 | 70·5 | 60·5 | Calm | ·145 | 63· | 62·5 | 60·5 | Calm | ·101 | 61· | 61·5 | 59· | ,, | |
| ·122 | 62·33 | 64· | 60· | ,, | ·163 | 62· | 63·3 | 59·5 | ,, | ·145 | 61· | 61· | 59· | ,, | ·92 |
| ·174 | 61·5 | 63·5 | 62· | ,, | ·156 | 62· | 66· | 60· | ,, | ·180 | 62· | 60· | 58· | ,, | ·10 |
| ·163 | 68·99 | 65·5 | 64· | ,, | ·167 | 67· | 63·5 | 61·5 | ,, | ·178 | 58· | 60· | 58·3 | ,, | |
| ·116 | 61·5 | 63·75 | 60·75 | ,, | ·143 | 62· | 63·5 | 60· | ,, | ·004 | 59· | 61·2 | 58· | ,, | |
| ·114 | 68·5 | 68·33 | 60·75 | ,, | ·110 | 67·75 | 67·25 | 60·5 | ,, | ·008 | 58· | 60·4 | 56·6 | ,, | |
| ·005 | 62· | 62·6 | 59·4 | ,, | ·000 | 62· | 62 6 | 59·8 | ,, | ·088 | 61·25 | 61· | 58·4 | ,, | ·80 |
| ·104 | 63· | 63·5 | 59·75 | ,, | ·082 | 61·75 | 61·75 | 59· | W. | 22·970 | 59·25 | 61·3 | 58·9 | ,, | ·72 |
| ·070 | 67·5 | 67·25 | 62· | ,, | ·077 | 64· | 65· | 62·4 | ,, | 23·031 | 60·5 | 61·5 | 58·6 | ,, | ·30 |
| ·081 | 69· | 64·75 | 62· | ,, | ·070 | 66·5 | 64·5 | 62·0 | ,, | 22·990 | 59· | 61·0 | 58·5 | ,, | ·12 |
| ·100 | 70· | 64·75 | 63·5 | ,, | ·074 | 65· | 63·25 | 61·3 | ,, | ·988 | 61· | 62·5 | 59·4 | ,, | ·16 |
| ·082 | 66·75 | 66·5 | 61·5 | ,, | ·076 | 64·5 | 64·75 | 62·8 | ,, | ·992 | 62· | 64·0 | 61·4 | ,, | ·12 |
| ·095 | 65·5 | 66·5 | 62· | ,, | ·072 | 63·25 | 63·5 | 61· | Calm | ·992 | 60·5 | 63·9 | 60·3 | ,, | ·24 |
| ·991 | 62·8 | 65·6 | 62· | ,, | 22·982 | 61· | 63·0 | 60·4 | N. E. | 978 | 60·7 | 62·0 | 58·0 | ,, | 1·24 |
| 23·072 | 64·75 | 65·5 | 61·2 | ,, | ·988 | 62· | 63·0 | 60·1 | ,, | ·995 | 60·2 | 63·5 | 59·0 | ,, | ·01 |
| ·114 | 67·5 | 68· | 61·75 | ,, | ·984 | 61·2 | 63·1 | 60·2 | ,, | ·982 | 60·5 | 64·0 | 60·1 | ,, | ·69 |
| | | | | | | | | | | | Total rain, inches.... | | | | 5·46 |

*Meteorological Register kept at the Survey Office,*

| | AT SUNRISE. | | | | | MAXIMUM PRESSURE, AT 9*h*. 50*m*. A. M. | | | | | AT APPARENT NOON. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TEMPERATURE. | | | | | TEMPERATURE. | | | | | TEMPERATURE. | | | | |
| Days of the Month. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind about 6 A. M. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Aspect of the Sky at Noon. |
| | | ° | ° | ° | | | ° | ° | ° | | | ° | ° | ° | | |
| 1 | 24·040 | 60· | 66·8 | 56·4 | N. W. | 24·048 | 66· | 66·5 | 63· | W. | 24·057 | 67·3 | 68·5 | 64· | N. W. | Cum. strati. |
| 2 | ·089 | 60·7 | 60· | 56· | ,, | ·100 | 65·5 | 66· | 63· | Calm | ·095 | 68·5 | 69· | 65· | ,, | ,, |
| 3 | ·047 | 58·3 | 59·1 | 59·2 | Calm | ·060 | 66· | 66·2 | 63· | ,, | ·050 | 69·2 | 69·5 | 64· | ,, | Clear, cum. |
| 4 | ·050 | 59·4 | 60·3 | 57· | ,, | ·071 | 65·5 | 66·2 | 62·5 | ,, | ·059 | 66· | 68·8 | 63·5 | Calm | Very misty. |
| 5 | ·046 | 59· | 60· | 56·8 | W. | ·070 | 67· | 65·5 | 61·5 | N. W. | ·081 | 70·5 | 70·8 | 62· | ,, | Nimbi. |
| 6 | ,, | ,, | ,, | ,, | ,, | ·068 | 64·4 | 65·4 | 61·3 | W. | ·072 | 69·0 | 69·3 | 62·4 | W. | Cumuli. |
| 7 | ·014 | 59·2 | 60· | 56·6 | W.N.W. | ·042 | 68·5 | 69· | 64· | W. | ·046 | 69· | 68·8 | 64· | W. | ,, |
| 8 | ,, | ,, | ,, | ,, | ,, | ·065 | 65.5 | 66·6 | 64· | N. W. | ·089 | 68· | 68· | 63· | W. | Cum. strati. |
| 9 | ·071 | 59· | 60· | 56· | N. W. | 23·982 | 65·2 | 66· | 59·5 | ,, | ·080 | 68·5 | 69·5 | 63·5 | N. W. | Clear. |
| 10 | ·041 | 58·7 | 58·5 | 54·3 | N. | 24·077 | 67· | 67·2 | 59·8 | ,, | ·070 | 68·2 | 68·6 | 63· | Calm | Clear, cum. |
| 11 | ·140 | 59·8 | 59· | 55· | Calm | ·165 | 67·5 | 68· | 61·6 | ,, | ·140 | 64· | 65·5 | 60·5 | ,, | Cloudy, nimbi. |
| 12 | ,, | ,, | ,, | ,, | ,, | ·116 | 66·5 | 66·8 | 61· | ,, | ·126 | 68· | 69·6 | 61· | W. | Clear, cum. |
| 13 | ·057 | 59·4 | 59·5 | 56·6 | N.N.W. | ·095 | 65·3 | 65·5 | 60·5 | Calm | ·093 | 66· | 67· | 59·7 | N. | Cloudy. |
| 14 | ·055 | 59·5 | 60· | 56·2 | N. | ·096 | 65·2 | 65·5 | 61· | N. W. | ·120 | 69·5 | 70· | 64·8 | N. W. | Clear, cum. |
| 15 | ·098 | 59· | 59·8 | 56·7 | N. W. | ·109 | 66·8 | 67·2 | 59·2 | N. W. | ·118 | 70· | 70·5 | 61· | N. W. | Clear. |
| 16 | ·084 | 60· | 60·5 | 56·4 | Calm | ·135 | 64·9 | 66· | 60·8 | N. | ·160 | 69·6 | 69·8 | 64·2 | Calm | Cirri strati. |
| 17 | ·071 | 59·6 | 60· | 57· | ,, | ·092 | 67· | 68·8 | 64·8 | Calm | ·102 | 65· | 67· | 63· | N. W. | Cloudy, nimbi. |
| 18 | ,, | ,, | ,, | ,, | ,, | ·221 | 66· | 67·8 | 61·5 | ,, | ·181 | 68·2 | 68· | 63·5 | N. | Clear, cum. |
| 19 | ·147 | 59·4 | 60· | 55· | N. | ·195 | 66· | 67·5 | 61· | N. W. | ·170 | 67·5 | 69· | 61·5 | N. | ,, |
| 20 | ·140 | 58·5 | 59·2 | 54· | N. W. | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, |
| 21 | ·137 | 59· | 59·7 | 54·8 | Calm | ·160 | 66·3 | 65·2 | 62· | N. W. | ·132 | 66·7 | 67·7 | 61·7 | N. W. | Cum. strati. |
| 22 | ·086 | 59·3 | 60· | 57· | ,, | ·164 | 66· | 63·7 | 59·9 | ,, | ·166 | 68·3 | 68·7 | 60· | ,, | Clear, cum. |
| 23 | ·047 | 60· | 60·4 | 57·5 | ,, | ·080 | 64·9 | 63·5 | 59· | ,, | ·133 | 68·7 | 69·5 | 60· | ,, | Cum. strati. |
| 24 | ·046 | 59·4 | 59·8 | 57·1 | ,, | ·194 | 66·5 | 66·5 | 63· | Calm | ·157 | 67· | 68· | 62·5 | Calm | Cumuli. |
| 25 | ·140 | 58·8 | 59· | 56·2 | N. | ·200 | 67·2 | 66·7 | 62.5 | ,, | ·193 | 64· | 66· | 62· | ,, | Cloudy drizzle. |
| 26 | ,, | ,, | ,, | ,, | W. | ,, | ,, | ,, | ,, | ,, | ·198 | ,, | ,, | ,, | ,, | ,, |
| 27 | ·146 | 57·4 | 58·2 | 56·4 | Calm | ·194 | 66·8 | 67· | 64·5 | ,, | ·170 | 68· | 68·7 | 65· | ,, | Cloudy, nimbi. |
| 28 | ·142 | 58·2 | 58·1 | 55·1 | ,, | ·193 | 65·5 | 66·2 | 62·2 | ,, | ·189 | 67·8 | 68·8 | 65·7 | ,, | Cum. strati. |
| 29 | ·146 | 60· | 60· | 57· | ,, | ·197 | 68·2 | 68·8 | 64·2 | N. W | ·180 | 70·5 | 71·8 | 67· | ,, | ,, |
| 30 | ·140 | 58·9 | 59·2 | 56·4 | ,, | ·164 | 68· | 68·7 | 64· | Calm | ·180 | 68·5 | 70·2 | 65·5 | ,, | Clear, cum. |

*Kotagherry, for the Month of September,* 1846.

| AT 2*h.* 40*m.* | | | | | MINIMUM PRESSURE, AT 4*h.* P. M. | | | | | AT SUNSET. | | | | | RAIN GUAGE. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TEMPERATURE. | | | | | TEMPERATURE. | | | | | TEMPERATURE. | | | | |
| Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Barometer. | Of the Mercury. | Of the Air. | Of the Wet Bulb. | Direction of Wind. | Inches. |
| | ° | ° | ° | | | ° | ° | ° | | | ° | ° | ° | | |
| 24·005 | 62·9 | 65· | 61· | W. | 23·966 | 61· | 61·8 | 59· | W. N. W. | 24·036 | 59·2 | 60·3 | 58· | W. | ·12 |
| ·083 | 70·5 | 72· | 67· | N. W. | 24·067 | 63·5 | 65· | 66·5 | N. W. | ·082 | 60·4 | 62· | 57·8 | N. | |
| 23·990 | 67·2 | 69· | 65·2 | ,, | ·059 | 67·2 | 68·7 | 66· | ,, | ·075 | 61·1 | 62· | 57·6 | ,, | |
| 24·064 | 65·5 | 66· | 63·5 | ,, | ·040 | 64·9 | 66· | 62· | ,, | ·056 | 61·2 | 62· | 58· | Calm | ·18 |
| ·062 | 70· | 70·5 | 62· | ,, | ·030 | 63·0 | 64·2 | 61·8 | ,, | ·047 | 61· | 62· | 57· | N. W. | ·08 |
| ·056 | 68· | 69·2 | 61· | Calm | ·048 | 66·2 | 67·1 | ,, | W. | ·041 | 60· | 61· | 58·3 | W. | |
| ·026 | 69·8 | 70· | 65·5 | ,, | ·016 | 68· | 70·2 | 62·5 | W. N. W. | ·004 | 60· | 61·4 | 57·6 | W. by N. | |
| ·063 | 68·8 | 69· | 65· | W. | ·018 | 65·8 | 66·8 | 61· | N. W. | ·012 | 62· | 62·5 | ,, | ,, | |
| ·075 | 67·8 | 69·2 | 62· | ,, | ·048 | 66·6 | 68· | 62·5 | W. | ·007 | 61·4 | 62· | 58· | N. | |
| ·137 | 66·2 | 67·5 | 61·2 | N. W. | ·122 | 64·5 | 65·7 | 60·9 | N. | ·118 | 62· | 62·8 | 57·4 | N. | |
| ·122 | 64· | 65· | 61· | Calm. | ·101 | 66·2 | 66·8 | 61·8 | W. | ·080 | 60·7 | 62· | 58· | ,, | |
| ·101 | 72· | 72·5 | 66· | N. W. | ·088 | 68· | 70· | 61·5 | N. | ·078 | 60·4 | 61·2 | 57·8 | N. W. | |
| ·053 | 65· | 66·2 | 60·4 | N. | ·090 | 67· | 68·1 | 61·7 | ,, | ·042 | 63· | 64· | 60·8 | N. W. | |
| ·107 | 70· | 70·8 | 62· | ,, | ·099 | 66·6 | 68· | 61· | W. | ·075 | 62· | 63· | 58·8 | Calm | |
| ·113 | 70·2 | 72· | 61· | N. W. | ·082 | 68·5 | 69·8 | 61·5 | N. W. | ·071 | 65·3 | 66· | 62·1 | N. W. | |
| ·090 | 68·6 | 70· | 63· | ,, | ·062 | 67·2 | 69· | 62·5 | ,, | ·060 | 63· | 64· | 60·7 | ,, | |
| ·085 | 65·3 | 66· | 62· | ,, | ·080 | 65· | 66· | 61· | ,, | ·074 | 61· | 62·1 | 57·4 | ,, | ·07 |
| ·157 | 63· | 64·5 | 61· | W. | ·127 | 63· | 64·2 | 61· | N. | ·129 | 59·2 | 60·4 | 58·2 | W. | ·28 |
| ·140 | 65·3 | 66· | 61·8 | ,, | ·140 | 64· | 65· | 60·8 | ,, | ·148 | 59. | 60· | 57·1 | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| ·088 | 68· | 70· | 63· | N. W. | ·078 | 67·5 | 68·7 | 66·1 | N. W. | ·070 | 64· | 65· | 60·9 | Calm | |
| ·014 | 67·5 | 70·5 | 62· | ,, | ·074 | 65·8 | 67·5 | 60·2 | ,, | ·086 | 61·2 | 62· | 58·2 | ,, | |
| ·097 | 67·7 | 68·7 | 61· | ,, | ·025 | 66·3 | 68·0 | 60·5 | Calm | ·036 | 61·6 | 62·2 | 57·8 | W. | |
| ·108 | 66·7 | 68·2 | 63·5 | Calm | ·013 | 68·9 | 69·5 | 64·5 | ,, | ·040 | 60·7 | 61·5 | 57·6 | Calm | |
| ·152 | 67·7 | 68·7 | 64·5 | ,, | ·115 | 66· | 67·7 | 63·9 | ,, | ·110 | 60· | 61· | 58·2 | ,, | |
| ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| ·112 | 69·2 | 70·4 | 66·2 | ,, | ·100 | 67· | 68·1 | 65· | W. | ·080 | 64·6 | 65·2 | 61·2 | N. W. | ·10 |
| ·097 | 68· | 70· | 66·7 | ,, | ·095 | 68·9 | 69· | 65· | Calm | ·090 | 65·1 | 66· | 59·9 | Calm | ·08 |
| ·101 | 64·8 | 66·5 | 62· | ,, | ·088 | 68·8 | 69·2 | 64·2 | ,, | ·097 | 66·2 | 67·1 | 62·4 | ,, | 1·05 |
| ·098 | 58· | 70· | 66·4 | ,, | ·104 | 68· | 69· | 65·2 | ,, | ·092 | 65·3 | 66· | 62·1 | ,, | |
| | | | | | | | | | | | Total rain, inches.... | | | | 1·96 |

## NOTE A—from page 78.

Some inquiries which we have been enabled to make regarding the amount of Revenue derived by Government from the Neilgherry Hills, have led us to conclusions somewhat differing from the results stated by Captain Ouchterlony in his memoir.

| | | According to Captain Ouchterlony. | | According to Collector's Account. | | |
|---|---|---|---|---|---|---|
| According to the public accounts of the settlement of $\frac{1256\ F.}{1846\text{-}7\ A.\ D.}$ the assessment on lands cultivated by Burghers and others was | Rs. | 7,820 | | 11,623 | 1 | 4 |
| The Abkarry Rent, | ,, | 16,300 | | 16,300 | 0 | 0 |
| Coopavary, | ,, | 300 | Moturfa | 769 | 12 | 5 |
| Shop Rent, | ,, | 24 | | | | |
| Sevae Jummah or Extra Revenue, | ,, | 875 | | 394 | 5 | 0 |
| Stamps, | ,, | 126 | —— | 56 | 0 | 0 |
| Post Office, | ,, | 12,953 | 25,445 | | | |
| District Post Office, | ,, | 164 | | 29,143 | 2 | 9 |
| | | 38,562 | | | | |

The extent of land in occupation and paying tax was as follows:

| | Bull. | a. | a. | | | | |
|---|---|---|---|---|---|---|---|
| Dry land under cultivation, | 3,679 | 13 | 12 | yields | 6,896 | 2 | 1 |
| Pasture land at ¼ assessment, | 1,170 | 12 | 4 | | 425 | 13 | 3 |
| Garden land under cultivation, | 50 | 10 | 12 | | 363 | 9 | 1 |
| ——— pasture, | 0 | 12 | 4 | | 1 | 5 | 6 |
| Total | 4,902 | 0 | 0 | | 7,686 | 13 | 11 |
| Deduct village charges, | | | | | 11 | 12 | 0 |
| Remaining net demand, | | | | | 7,675 | 1 | 11 |
| Add ready money collections, | | | | | | | |
| Fixed Sournadayen, | | | | | 1,119 | 11 | 3 |
| Quit Rent, | | | | | 2,828 | 4 | 2 |
| Total demand, | | | | | 11,623 | 1 | 4 |
| Of which the proportion collected within the Fusly was | | | | | 10,378 | 6 | 6 |
| Leaving a balance for subsequent realization of | | | | | 1,244 | 10 | 10 |

According to the Revenue accounts the lands are entered under six

different villages or parishes, some of which contain several hamlets. The former are:

| | | | | |
|---|---|---|---|---|
| Todanaad, of which the assessment is - - - - - | Rs. | 3,550 | 9 | 5 |
| Kekenaad, - - - - - - - - - - - - - - | | 2,185 | 15 | 8 |
| Boodenattam, - - - - - - - - - - - - - | | 171 | 10 | 3 |
| Sembanattam, - - - - - - - - - - - - - | | 120 | 8 | 5 |
| Segoor, - - - - - - - - - - - - - - | | 175 | 3 | 5 |
| Paranganaad, - - - - - - - - - - - - - | | 2,591 | 6 | 8 |
| | | 8,794 | 13 | 2 |
| Quit Rent, - - - - - - - - - - - - - | | 2,828 | 4 | 2 |
| | | 11,623 | 1 | 4 |

The above is the Revenue of the Coimbatore parts of the Hills only. That of the Malabar portion we have not been able to ascertain farther than as stated at p. 78, it amounted to Rupees 649-3-2 in $\frac{\text{1243 F.}}{\text{1843-4 A. D.}}$

The general revenue and statistical condition of the Hills, as exhibited in the official returns, is contained in the following tabular statement:

*Statement showing*

*Statement showing the details of Settlements for Fusly 1256, as per Jummabundy Account, No. 2.*

| Heading | Item | Value |
|---|---|---|
| No. of Villages. | | 6 |
| Land Revenue of Fusly 1255, including Sournadayem. | | Rs. A. P. 11,417 9 1 |
| Villages liable to Assessment for Fusly 1256. No. of Villages. | Cultivated. | 5 |
| | Deserted. | 1 |
| | Total. | 6 |
| No. of Hamlets. | Cultivated. | 47 |
| | Total Villages. | 53 |
| Irrigation. | Tanks. | 2 |
| | Jungle Stream. | 1 |
| | Dam. | 1 |
| | Total. | 4 |
| Ryots. Resident Ryots. | No. of Ryots. | 1183 |
| | No. of Puttahs. | 1183 |
| Migratory Ryots. | No. of Ryots. | 73 |
| | No. of Puttahs. | 73 |
| | Ploughs. | 986 |
| Non-Agricultural persons paying Tax. | No. of Ryots. | 260 |
| | No. of Puttahs | 260 |
| Population | No. of Houses. | 3856 |
| | Males. | 8263 |
| | Females. | 6912 |
| | Total. | 15,175 |
| Cattle. | Cows. | 4545 |
| | Bullocks. | 4090 |
| | She Buffaloes. | 2297 |
| | He Buffaloes. | 835 |
| | Sheep. | 89 |
| | Total. | 11,[illegible] |

| Heading | Sub-heading | Item | Value |
|---|---|---|---|
| Poonjah or Dry Lands in the ordinary occupation of Ryots. | Cultivated. | Extent of Land. | Bullahs as. as. 3679 13 12 |
| | | Settlement. | Rs. A. P. 6896 2 1 |
| | Meadow or Grass Land. | Extent of Land. | Rs. 1170 12 4 |
| | | Assessment. | Rs. 1702 7 4 |
| | | Deduct ¾ Remission. | Rs. 1276 10 1 |
| | | Remainder Settlement. | Rs. 425 13 3 |
| | Total Poonjah Land. | Extent. | Bul. 4850 10 0 |
| | | Original Assessment | Rs. 8598 9 5 |
| | | Deduct Remission. | Rs. 1276 10 1 |
| | | Net Settlement. | Rs. 7321 15 4 |
| Garden Lands. | Cultivated. | Extent of Land. | Bul. 50 10 12 |
| | | Settlement | Rs. 363 9 1 |
| | Meadow or Grass Land. | Extent of Land. | Bul. 0 12 4 |
| | | Assessment. | Rs. 5 6 4 |
| | | ¾ Remission. | Rs. 4 0 10 |
| | | Remg. Settlement. | Rs. 1 5 6 |
| | Total Garden Cultivation. | Extent. | Bul. 51 7 0 |
| | | Assessment. | Rs. 368 15 5 |
| | | Deduct Remission. | Rs. 4 0 10 |
| | | Net Settlement. | Rs. 364 14 7 |
| Total Land Revenue from all Sources. | Cultivated. | Total Settlement. | Rs. 7259 11 2 |
| | Grass Land. | Assessment. | Rs. 1707 13 8 |
| | | Deduct ¾ Remission. | Rs. 1280 10 11 |
| | | Settlement. | Rs. 427 2 9 |
| | Total. | Assessment. | Rs. 8967 8 10 |
| | | Deduct ¾ Remission. | Rs. 1280 10 11 |
| | | Total. | Rs. 7686 13 11 |
| | | Deduct salaries of Monigars and Village Sibbendy. | Rs. 11 12 0 |
| | | Remainder of Land Revenue Settlement. | Rs. 7675 1 11 |
| | Fixed Sournadayem | Tax on Trees. | Rs. 3 1 4 |
| | | Tax on Cattle. | Rs. 970 15 7 |
| | | Hill Rent, &c. | Rs. 65 13 1 |
| | | Jodegay or quit rent | Rs. 2828 4 2 |
| | | Paroova or pasture Tax. | Rs. 79 13 3 |
| | | Total. | Rs. 3947 15 5 |
| Grand Total of Land Revenue including fixed [illegible] | | | Rs. 11,6[illegible] 1 4 |

## II.—*On the Fresh Water Fishes of Southern India.* By T. C. Jerdon, Esq., *Assistant Surgeon, Madras Establishment.*

Icthyology has never been a favourite study with English writers; and of all the branches of natural history it is the most neglected by amateurs and collectors. The difficulty of procuring fishes, and the uninviting appearance they present in general, is, doubtless, the chief cause of this: to which may be added the meagre history we are able to procure of their habits and manners.

We can assure the reader, however, that if once he commences the study of the finny tribe, he will find himself amply repaid by the number and variety of forms he will meet with, and the rich colouring of many; whilst the philosophic naturalist, in his attempts to arrange fishes in their natural order, will find abundant materials to work upon, and a greater individuality of form belonging to each species, than, perhaps, in any other of the vertebrated classes.

With regard to Indian fishes we have in Russell's two folio volumes but very few fresh water fishes. Cuvier and Valenciennes have, however, described many from the Carnatic and Malabar, of which I have been unable to identify several; and Hamilton Buchanan in his Fishes of the Ganges, and McLelland, in his valuable paper on the Cyprinidæ in the Asiatic Researches, have described a vast number; of which, however, we appear to possess but few in the south of India. Colonel Sykes has given a list of the fresh water fishes of the Deccan, which is very valuable, as it enumerates many new species from the tributaries of the Kistnah and Godavery—a locality which I have not had an opportunity of observing, since I turned my attention to this branch of natural history. His descriptions however are rather brief, and it is impossible to make out his species accurately, without a comparison with allied forms; and I regret much that Valenciennes has not attempted this: nor has he indeed introduced them at all into the great work on fishes of Cuvier himself. I shall notice Sykes' species in their proper place.

My own researches have been, as yet, confined to parts of the Carnatic, of Mysore, and of Malabar. I have obtained, chiefly among the carp, many species apparently new, which I shall briefly describe; and, to make the catalogue more complete, I will introduce all those described by Cuvier and Valenciennes, which I have not met with

myself; so that future inquirers can at once ascertain if a fish they meet with be a known one, or a nondescript.

### Ord. Acanthopterigii.

### Fam. Percidæ—Perches.

Mouth large. No scales on the fins. Operculum usually spined, and pre-opercule serrate. Teeth in the jaws, and vomer and palate; scales usually large.

### Genus. *Ambassis*—Cuv.

Lower jaw long. Pre-opercule doubly crenated. Dorsal fins almost distinct: a procumbent spine before first dorsal. Caudal fin large forked.

### *Ambassis Commersonii.* C. V.

Height rather more than a third of its total length D $7\text{—}\frac{1}{9}$, A $3\text{—}\frac{1}{9}$ greenish above, silvery beneath, with pink and yellowish reflections. Length about 6 inches. This fish though found in estuaries and the mouths of all our rivers, is hardly a genuine fresh water fish.

### *A. Malabaricus.* C. V.

Height not a third of its length. Fin rays, D $7\text{—}\frac{1}{11}$, A—$\frac{3}{9}$, &c. 5 inches long.

I have found this ambassis in rivers of Canara and Malabar, above the influence of the tides, and in company with many true fresh water carp: so that its claim for a place in our catalogue is well founded.

It enters small streams, ditches, &c. for spawning; and I have found the young in great abundance in February, swimming in large shoals.

### *A. Baculis.* Buch. P. G. p. 112?

Length about twice and a quarter the height. Fin rays D. $7\text{—}\frac{1}{13}$ A. $\frac{3}{13}$. Silvery, diaphanous.

I am by no means certain that this is Buchanan's fish, or Cuvier's *A. alta;* to both of which it has some resemblance. *A. baculis* is said to have D. $7\text{—}\frac{1}{13}$ and A. $\frac{3}{13}$ and *A. alta* D. $7\text{—}\frac{1}{15}$ A. $\frac{3}{14}$, and as both are from Bengal it is possible that, on comparison, my species may be distinct; in which case I suggest the name of *A. Carnaticus.*

It is found in most of the permanent tanks throughout the Carnatic, and does not exceed one and a half inch in length, in general.

Sykes' *A. Barlooi* described as having D. 7—14. A. 18, and a short vertically compressed diaphanous body, is very closely allied, apparently, both to our species and to *A. vanga* of Buchanan, which has D. $\frac{7}{12}$ A. $\frac{3}{15}$, and is very similar in shape to our presumed *A. baculis.*

Gen. *Nandus.* C. V.

Mouth protractile—five teeth in both jaws, palatines and vomer. Spine of opercule small, pre-opercule and interopercule finely serrated.

*Nandus marmoratus.* C. V.

*Coius nandus*, Buch. P. G. p. 96. *Bedula Hamiltonii*, Gray.

Height one-third of length—head the same thickness, one-third of height. Fin rays D. $\frac{13}{12}$—A. $\frac{3}{7}$—colors olive green marbled with brown. Length about 5 or 6 inches.

I have found this curious percoid fish only in tanks in the neighbourhood of Madras, and in other parts of the Carnatic. It is not mentioned as from Pondicherry in Cuvier and Valenciennes, whose specimens were all from Bengal.

New Genus. *Pristolepis.*

Char.—Body broadly oval, compressed; pre-opercule finely serrated; opercule with two flat spines; jaws nearly equal. Teeth 'en velours,' in both jaws, in vomer and palatines, and base of tongue, with a row of larger pointed teeth in front, of unequal size in the upper jaw; dorsal fin with small scales at its base; scales large, rough, very finely serrated externally (whence the generic name); lateral line interrupted; 6 branchial rays.

*Pristolepis marginatus.*—(New Species.)

Scales on the pre-opercule large, those on the opercule smaller. Color sapgreen, palest beneath; dorsal fin with a streak of orange on the membrane of the spinous portions of the dorsal and anal fins. Some small scales at the base of the tail. Pectoral fin rather large, somewhat rounded; soft parts of the dorsal and anal fins much higher than the spinous, and rounded; tail rounded and lateral line parallel with the back for the length of the dorsal fin nearly, and distant a quarter of the height of the body, and on the 3d scale; afterwards central and on the 7th scale. Head is to the body in the proportion of 1 to 3; and the height of the body is about half the length, *not* counting the dorsal fin. Fin rays as follows: D. $\frac{15}{12}$ A. $\frac{4}{8}$—P 15. V $\frac{1}{5}$

My specimens are only about 4 inches long, but I am told that it grows considerably larger. I was much puzzled with this fish on first procuring it, and am even now undecided if I am right in placing it in a new genus. It is allied to *Dules*, *Centrarchus*, *Pomotis*, and *Cychla*, but appears to differ from all. From *Dules* it differs in its general habit, interrupted lateral line, shape of caudal fin, &c., from *Centrarchus* in its serrated pre-opercule; from *Cychla* which is said to have an interrupted lateral line, in its spined operculum, and from *Pomotis* in wanting the prolongation of the opercule, and its interrupted lateral line—*Centrarchus*, *Pomotis* and *Cychla* however, are all American fish. Three or four species of *Dules* are described from Java, and other Eastern Islands, but none from the continent of India. I have procured specimens both from the river of Manantoddy, flowing into the Cauvery; in the Cotiaddy river in north Malabar, and in the stream that runs near Canote in the same district, where I saw it in the rapid streams.

### Fam. *Sciænidæ*.

Fins partially scaled at their base; operculum armed; pre-opercule serrated; no teeth on the vomer or palate.

### Gen. *Etroplus*. Cuv.

Body oval; teeth strong, notched in the middle; mouth small; anal fin long; caudal, square or lunate.

### *Etroplus maculatus*. C. V.

D. $\frac{18}{14}$ A. $\frac{12}{10}$, of a dusky green colour with vertical dark bands—ventral and anal fins inky black; a black band at base of tail.

This fish is very common in tanks in the Carnatic, when it is called *Senel kas*, or *Nelle tanni Sipeli*, *i. e.* fresh water *Sipeli*, which is the name of the *Scatophagus argus*. It is said by the natives to be good eating, but from its small size—not exceeding 3 inches—it is not sought after. I know nothing of its habits. Its Telinga name is *Cashi-mara*. Cuvier and Valenciennes appear not to have seen this fish, which was however sent to Bloch from Tranquebar, and Schneider describes it accurately.

### *Etroplus coruchi*. C. V.

Height half its length; muzzle concave, prominent; teeth distinctly 3 pointed. Fin rays $\frac{18}{10}$ or $\frac{20}{10}$ A. $\frac{13}{9}$. Color green above, yellowish beneath; scales of body and dorsal fin, ornamented with longitudinal rows of orange dots. Pectoral fin greenish; ventral

blackish; anal green with orange dots and margined with black; some black spots on the sides of the body. This pretty little fish is most abundant throughout the fresh waters of the western coast, being found in rivers, tanks, ditches, and pools. It is very numerous in the little streams that run through the low paddy grounds in Malabar, which abound with water lilies and many other aquatic plants. At the season of spawning the fish (both male and female I believe, though I am not quite certain of this) assumes a brighter livery than at other times; the yellow of its lower surface deepens, and the one dark spot on its side is accompanied by several others, so much so as to give it a marbled appearance, which however is somewhat transient. The eggs are not very numerous, and are deposited in the mud at the bottom of the stream, and, when hatched, both parents guard their young for many days, vigorously attacking any large fish that pass near them. I have had an opportunity of observing this, as well among fish in confinement as in the streams. When kept along with other species it is very pugnacious, attacking all indiscriminately. It is readily taken with worm on a small hook.

### Fam. *Mugilidæ*—Mullets.

Though none of the mullets can be called fresh water fish, yet some of them ascend rivers to a considerable height, and after the monsoon are often to be found in the streams that intersect the paddy fields when communicating with a river, and even in the inundated paddy fields, where, as the waters evaporate and the bunds are closed, hundreds, chiefly of small size, are caught every year.

### Fam. Spirobranchidæ. Swainson.

*Pharyngiens Labyrinthiformes* of Cuvier.

Belly very short; vent, near the pectoral part of the upper pharyngeals, laminated and capable of retaining water. Dorsal fin single, long.

This is a very peculiar order of fishes and very characteristic of India; several of the species being widely spread over the whole peninsula; and the most marked genus of the family, (viz.: Ophicephalus) abounds in nearly allied species, as is usually the case in all genera that are peculiarly characteristic of any country. From the conformation of these fishes they are enabled to live long out of water, and some of them bury themselves in the mud, when the waters of the tanks or ditches are dried up; and are enabled to live for some time

in a torpid state, till a fresh supply of water calls them into renewed existence.

### Gen. *Anabas.* Cuvier.

Exterior edge of operculum strongly serrated; and armed with spines; pre-opercule smooth; spines of the dorsal and anal numerous; scales on head and body strong. Teeth minute, with a few larger in front, especially beneath, and some in front of vomer, on the vomer, and on the pharyngeals, but none on the palatines; lateral line interrupted, a few small scales on base of the dorsal, caudal, and anal fins.

### *Anabas scandens.* (Dald.)

*Anthias testudineus*, Bloch; *Amphiprion scansor*, Schneider; *Coius cobojius*, Ham. Buch.; *Goraka*, Teloogoo; *Panni-eyri*, Tamul.

Very variable in color, usually greenish, marbled or speckled with darker, occasionally quite black, fins reddish usually, and in the young spotted. D. $\frac{16}{9}$ A. $\frac{10}{10}$

This species, the only one of its genus, is found not only all over India proper, but in Burmah, Malacca, Java, Celebes, and other eastern isles. It has attained some celebrity from the fact of its being occasionally found on palm trees growing close to the water's edge. Lieutenant Daldorf mentions that he himself took one from a cleft in the bark of a palmira palm, five feet above the tank. The natives of the Carnatic invariably assert that it is a common occurrence to find them in such situations, and I think there is no reason to doubt that it often takes place. I may here remark that the Tamil name, *Panneieri*, means climber of palmira trees, not of trees in general. I have kept small ones in a vase of water. They, in general, are very sluggish, but every now and then rose slowly to near the surface of the water, then made a dash to the top, and down to the bottom again with all speed. Some individuals (young ones) had the tail and soft part of the dorsal fin much lengthened, thus approximating some of the species of Macropodus, but the prolongation does not appear to be persistent. This fish abounds in all the ditches, pools, and tanks throughout Southern India, but is not in general found in the rivers. I have not seen it longer than 6 inches, usually less.

### Gen. *Colisa.* Cuvier.

Dorsal and anal fins long; base covered with scales; ventral consisting of a long ray reaching to the end of the tail which is rounded.

*Colisa fasciata.* (Bloch.)

D. $\frac{4}{9}$ A. $\frac{16}{13}$. Eight or ten vertical dark bands on sides of body. Hab. Tranquebar. I know nothing of this or the next species, but as several of the genus are stated to inhabit fresh waters, I have included them in this list.

*Colisa Ponticeriana.* Cuvier.

Opercule rounded with a black spot near its lower edge; oblique brown lines on its body. D. $\frac{16}{12}$ A. $\frac{16}{17}$. Hab. Pondicherry.

Gen. *Ophicephalus.* Cuvier.

Body lengthened, somewhat cylindrical; head broad, depressed, covered with bony plates; muzzle short, obtuse; dorsal fin long; it and the anal destitute of spiny rays.

*Ophicephalus punctatus.* Bloch.

*O. Karouvei*, Lacep. *O. lata*, Ham. Buch.

Body compressed behind the pectorals; muzzle semi-circular; eyes near the end of the muzzle. D. 31, A. 20, V. $\frac{1}{5}$. Color dusky green above, whitish beneath, with obscure markings on the back, dorsal, anal, and caudal fins. I have not seen any spotted in the marked manner described by authors. The rays of the dorsal fin are sometimes 30, and those of the anal 21, 22, and 23.

This fish which is the *korave* of the Tamuls, and the *muttah* of the Telingas, is exceedingly common in all the sluggish rivers of India, and also in almost every tank, ditch, and well. It is not usually met with longer than 6 or 8 inches, but is said to reach a foot and more. It is very easily taken with a hook baited with worm, and is said to be good eating.

*Ophicephalus marginatus.* Cuvier.

Head shorter, broader, and more round than the last; ventrals very small, of an uniform dusky green color, lighter beneath; dorsal and caudal fins margined with orange; the former, and pectoral, with a tinge of the same color throughout. D. 34, A. 22.

I have found this species most abundant in Mysore, both in rivers and tanks, but it is also found in the Carnatic. I have not seen it longer than 6 inches. The natives apply the same name to it as to the last, which indeed it very closely resembles.

*Ophicephalus fuscus.* Cuv. and Valem.

Head and cheeks more swollen out than the last. D. 35 or 36. A. 22. From Bengal and Mysore, 6 inches long. I have not seen this species myself, to my knowledge at least, for I may have very easily passed it over.

*Ophicephalus striatus.* Bloch.

*O. Chena* and *C. Sola.* Ham. Buch.

Head depressed rounded in front, D. 40 to 45, A. 26—27. Colors, dusky green above, white beneath, with bars of the former color extending into the white of the lower parts. Belly often spotted; fins sometimes uniform in tint, at other times barred and spotted.

This fish is the *Kora* of the Telingas, and the *Varalu* of the Tamuls. It abounds in all large rivers and tanks, and is highly esteemed both by Natives and Europeans, and as it is the only good fish to be procured at many inland stations is much sought after. It attains a large size. I have seen it nearly 3 feet long. It is very voracious, and is easily taken with a frog or small fish as a bait.

*Ophicephalus marulius.* Buch.

Head more compressed than in the others of this genus. D. 52 to 56, A. 31 to 35. Colors greenish above, white beneath. Dorsal and anal fins fine green, dotted with white spots; body sometimes similarly white spotted. Attains the length of 3 feet and more. I have seen this very fine fish only in large rivers. It is most excellent eating. I think that Sykes' O. *leucopunctatus*, described as having 51 to 53 rays in the dorsal fin, must be identical with this species, which is said by Buchanan to be found in every part of India.

I may here state that *Polyacanthus cupanus.* C. V. another fish belonging to this family—is only found, that I am aware of, in backwaters and rivers within the influence of the tides. It must be handled with caution, for the spines of its fins inflict a most severe burning pain which lasts for two or three hours.

FAM. SCOMBERIDÆ—?

Sub. Fam. *Notacanthinæ.* Swainson.

Body anguilliform, compressed; dorsal and anal long, and close to the caudal; a series of detached spines in front of the dorsal fin; snout lengthened.

Gen. *Rhynchobdella.*

Snout very projecting, fleshy, bent downwards, three cleft; caudal fin distinct.

*Rhynchobdella aculeata.* Bloch.

*R. Ocellata.* C. V.

Brown above and on the sides, yellowish beneath, fins with a sienna tinge, and the dorsal with three black spots or eyes; caudal barred, fin rays D. 18—52, A. 3—52. Length about 9 or 10 inches.

This species, the only one of its genus, is common enough in the rivers and tanks of the Carnatic; but I have seen it no where else. It is called *Aral* by the Tamuls, and *Bomri* by the Telingas. The number of spots on the dorsal fin varies. It is said to be good eating.

Gen. *Mastacemblus.*

Snout projecting; some small spines on the pre-opercule; dorsal, anal, and caudal fins united.

*Mastacemblus ponticerianus.* C. V.

A row of 18 spots along the back, and 12 along the edge of the anal fin. D. 78, A. 72.

I have not seen this fish which appears very similar to the Bengal *M. armatus.*

*Mastacemblus marmoratus.* C. V.

Green above, yellowish beneath, tinged with sienna under throat; spots on the back, and marbling on the sides dusky brownish; depth of body to the length as 1 to 12 or 13. D. 37 to 39, 84 to 87, A. 3—90 to 92.

I have procured this fish from the tanks about Bangalore, and in rivers that flow into the Cauvery. It grows to the length of 2 feet and upwards. It is the *Konda Bomri* of the Telingas.

*Mastacemblus Malabaricus.* (New Species.)

Body less thick in proportion to its length than the last; colors very similar, but the marbling more distinct, and extending lower down the sides. D. 37—74? A. 3—74.

I have found this species, which is very closely allied to the last,

in streams and rivers in Malabar. It grows to the length of 18 inches and upwards, and is considered good eating.

Col. Sykes has in his list a *Mastacemblus armatus* of which he says: "Fins of the tail, back, and vent united, with 39 to 40 short sharp bony spines along the back and two behind the vent. This fish has not the exact generic characters of Macrognathus, Mastacemblus, or Notacanthus, and might probably constitute a genus between the two last."

### Fam. Gobidæ.

Head large; ventral fins generally united; anterior dorsal rays slender, flexible.

### Gen. *Gobius.*

Caudal fin rounded or lanceolate; dorsal fins two; lower jaw longest.

### *Gobius kokius.* C. V.

Head about a quarter of the total length, broad; muzzle obtuse; eyes approximated; profile of head almost on a line with that of back; D. 6—$\frac{1}{9}$, A. $\frac{1}{8}$ of a dusky greenish fulvous tinge, with large wavy spots on the back and sides; caudal and second dorsal spotted, reaches 8 or 9 inches in length.

Very common in tanks, rivers, and ditches throughout the south of India. It is a sluggish fish keeping to the bottom; and very voracious. When it moves it does so close to the ground, generally raising a cloud of mud about it, which conceals its situation. It is called *Baligedda* by the Southern Telingas, and *Koka* in the north, according to Russell.

### *Gobius neglectus.* (New Species.)

*Bullee korah,* Russell pl. 53? but not *G. Russelii,* C. V.

Profile of head sloping from the eye to muzzle. Head a quarter of total length; not so broad as in the last one; eye one-fifth of length of head, and distant barely one diameter from each other; scales small, about 50 along the body. D. $\frac{6}{11}$, A. 10 or 11.

Until I had actually compared my fish with the ample description in Cuvier, I had no doubt of my fish being the *G. Russelii,* to which he refers Russell's figure; but there are too many points of difference to allow of this. In *G. Russelii* 'the eyes small and distant, their diameter is one-eighth the length of the head, and they are dis-

tant two diameters from each other. D. 6—$\frac{1}{8}$, &c. &c.' The colors of our fish are nearly uniform fulvous, with occasionally some dark markings on the back; and the second dorsal and caudal fins spotted. I procured it from the vicinity of Madras, where however it is rare, and also from streams in Malabar, where it is by no means uncommon near the mountains, and there completely replaces *G. kokius* of the lower parts of the district. I have seen it nearly 8 inches long. Colonel Sykes has a *Gobius kurpah* of which he says, "7 rays in first dorsal, 11 in the second, which is of similar size with the anal fin, 19 in the pectoral, and 10 in the anal fin." It is impossible from these few details to decide whether this be a distinct species, or to be referred to some of those described.

### Gen. *Eleotris.*

Ventral fins not united; eyes remote; six branchial rays.

#### *Eleotris nigra. Q. and G.*

Scales small, 65 along the body, and 22 or 23 in its depth; body, broad in front, and compressed behind; its depth one-fifth of its total length. D. 6—9. A. 1—8. Color very variable, usually yellowish above, dark on the sides and beneath, each scale marked with black; fins yellowish, the rays finely barred; cheeks and opercula dark with pale markings; 3 to 4 inches long.

I have not seen this Gobioid fish in the Carnatic. It is very common in Malabar in ditches and tanks, concealing itself under stones, and among weeds; and remaining for hours motionless. Its movements are very slow, and it is very fond of fixing itself vertically to the side of a tub or vase (in which it may be confined) with its head downwards. It has the faculty of changing its colors, at times becoming nearly black, at other times marbled; and usually with a strong line of demarcation between the tint of the back and sides. Its nostrils are tubular and exserted. It appears widely spread, being found in the Ganges, at Bombay, Java, Waigion, Society Isles, Madagascar, and the Mauritius, at which place it is named *l'endormi* and *Cabot noir.*

III. *Notice of the Scientific labors of the late* Dr. Alexander Turnbull Christie, *with extracts from his Official Reports submitted to Government.*

Among the papers transmitted by order of Government to the Literary Society, for examination and publication in the Journal of Literature and Science, is a correspondence extending from 1829 to 1834, connected with the appointment of the late Dr. Turnbull Christie, to investigate the natural resources and productions of this Presidency.

Unhappily for the cause of science Dr. Christie did not live to carry out the designs which induced him to solicit the employment above mentioned. A brief interval of little more than six months only intervened between his return to India and an attack of remittent fever, which rapidly hurried him to the grave. The papers under consideration, therefore, have not been found to contain much new or valuable matter; but we gladly embrace the opportunity, which such an occasion affords us, of commemorating, in the pages of this Journal, the name of one whose scientific knowledge and acquirements were only equalled by his modesty and worth in private life, and whose indefatigable zeal in the pursuit of knowledge would, had his life been spared, have ensured him a more lasting place in the records of science.

Alexander Turnbull entered the medical service of the East India Company in September, 1822, and was first appointed to do duty, as a probationer, with the Horse Artillery, St. Thomas' Mount. In 1823 he proceeded in medical charge of a detachment of young Officers from Wallajabad to Gooty; and subsequently in charge of details of Artillery to Secunderabad and Jaulnah, where he joined the C Troop of Horse Artillery commanded by Captain Black. In the same year he was present with that Troop at the disastrous affair under the walls of Kittoor, in which all the other officers being killed or disabled, the charge of conducting the remains of the detachment to Dharwar, devolved upon him. His conduct on this occasion met with the approbation of his superiors, and a vacancy occurring at the time, in the situation of medical officer to the Political Agency in the Southern Mahratta country, he was nominated to succeed Dr. G. Hamilton Bell, at his own request, supported by the earnest solicitation of all the residents at the station.

Here he remained until December, 1827, when a severe attack of illness compelled him to return to his native land for the recovery of

his health, having shortly before succeeded to the small landed property of Grueldykes in Berwickshire; in consequence of which he adopted, in addition to his own, the maternal surname of Christie. An opportunity was now afforded him for the renewal of his scientific studies, of which he eagerly availed himself, prompted not only by his taste for such pursuits, but by his anxiety to carry out a favorite and long cherished project for systematically and thoroughly investigating the natural history of India. During his intervals of leisure he contributed various papers, the results of his previous observations, to the Edinburgh Philosophical Journal, conducted by his old master Professor Jameson. The chief of these was a valuable topographical description of the Dharwar province, and neighbouring districts, entitled "Sketches of the meteorology, geology, agriculture, botany, and zoology of the southern Mahratta country;"* in the course of which he gave one of the earliest, if not the very first description of the cataract near Garsuppa in Canara, with notices of the ruins of Bijanagar and other places of interest.

The chief value of this paper consists in the minute and interesting observations it contains on the geognostic relations of the tract between Hyderabad and the Malabar Coast, and the Dooab of the Kistna and Tongabadra.

Meantime, his application to the Court of Directors, for permission to devote himself more exclusively to his favorite pursuits, had been attended with success. In a despatch of the 2d June, 1830, they transmitted to Madras the testimonials which he had submitted of his qualifications, and authorized the Government of Fort St. George to relieve him from his duties as a medical officer, for the space of two years, to enable him to prosecute his researches in geology and mineralogy, during which he was to receive the ordinary pay and allowances of a medical officer, without a specific professional charge. These testimonials which are given below† were of the most flattering

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* Edin. Phil. Journal, Vols. for 1828, p. 292—1828-29, p. 98—1829, p. 49, re-published in this Journal, Vol. IV. pp. 185 and 452.

† GEOLOGICAL SOCIETY, SOMERSET HOUSE, 6*th April*, 1830.

MY DEAR SIR,

You are probably well aware of the very imperfect state of our knowledge respecting the Geological structure of the Peninsula of Hindostan, and you will therefore, we feel certain, lend your assistance in the furtherance of any effort to acquire the requisite information thereon. A friend of ours, and a fellow of our Society, Dr. James Turnbull

character, and bear the signatures of Sedgwick and Murchison, of Brongniart, of Brochant de Villiers, and of Jameson.

Mr. Turnbull Christie left England, on his return to India, about the beginning of 1831, travelling through France and Italy, thence embarking for Alexandria. He remained some time in Egypt, and after visiting Syria and Mount Sinai proceeded down the Red Sea to Bombay, which place he reached in April, 1832. Before leaving England he had provided himself with a complete set of instruments for ascertaining the nature of the meteorological and hydrographical phenomena that might present themselves to his attention, and was accompanied by a painter to depict objects of zoology, comparative anatomy, botany, &c. &c.

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Christie, a Medical Officer in the service of the Honorable East India Company, who is about to return to the East, is extremely desirous of obtaining the permission of the Court of Directors, to employ himself exclusively in elucidating the geology of the Company's possessions; and we have no hesitation in stating that he is well qualified to enter upon such a task. Since his arrival in Europe he has travelled through France and Italy, where he has worked with various eminent Geologists—Von Buch, de Beaumont, &c.—and he is now sedulously occupying his time in acquiring an intimate acquaintance with the English strata; it being his intention, during the ensuing summer, to revisit all our coal mines, and to examine in detail the coast sections from the Isle of Wight to Cornwall.

It would be superfluous on our part to point out the manifold advantages which might accrue to the Company, from the employment of such a man of science in the unexplored field of Hindostan: the mineral riches of which (especially certain great *coal* basins) still remain to be developed.

We cannot but hope that a Government which fosters and encourages, with so much liberality, the sciences of Botany and Zoology, will equally aid the Geologist in his endeavours to unveil the *numerical** structure of the vast empire which it rules over.

Requesting you therefore to state the case to your brother the Chairman, we subscribe ourselves.

Your's very sincerely,

(Signed) A. SEDGWICK, *President.*
R. MURCHISON, *Secretary.*

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COLLEGE MUSEUM, EDINBURGH, *April 6th*, 1830.

This certifies that Dr. Alexander Turnbull Christie, before leaving Europe for India in 1822, studied in this University the following branches of Natural History, viz., Geology, Mineralogy, Meteorology, Hydrography, Botany and Zoology. That, during his residence in India, he continued to cultivate Natural History with great zeal, and much success. That since his return to Britain, with the view of enabling him to carry on his investigations in India, on his return to that country, in

**Sic orig.*

From Palermo, in a letter to Professor Jameson, dated 31st May,* he communicated a notice of some curious caves in the neighbourhood of that city, containing diluvial remains of the large extinct mammalia, which, unlike those of Kirkdale described by Professor Buckland, occurred as constituents of a breccia, in some cases *superimposed* on more recent quaternary formations, containing shells identical with those now existing in the Mediterranean. A more extended description of the same phenomena, transmitted to Sir R. J. Murchison, President of the Geological Society, was read before that body on the 2d November, and appeared in the Edinburgh Philosophical Journal for 1831-32.

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the most efficient manner, he has, during his residence in Edinburgh, continued his studies in Geology with unabated zeal; and that, lately, he has spent a year in France, and other countries on the continent of Europe, in enlarging his acquaintance with Geology and other branches of Natural History.

We have therefore much pleasure in certifying that, in our opinion, Dr. Alexander Turnbull Christie is eminently qualified to undertake and execute, not only the important duties of a geological surveyor, but also, from his intimate acquaintance with Meteorology, Botany, and Zoology, of adding to the interest and value of his Geological reports, by scientific and practical observations and views in regard to the climate, and the characters and uses of the vegetable and animal productions of the various countries he may examine or pass through.

(Signed) Robert Jameson,
*Regius Professor of Natural History, and Lecturer on Mineralogy, &c.*

The undersigned, Member of the Paris Academy of Sciences, Professor of Mineralogy at the Royal Museum of Natural History, &c., most willingly gives testimony of the assiduity and application, with which Mr. Christie attended his courses of Mineralogy at the Museum; and it gives him pleasure to state the frequent, long, and a long time continued visits made to him by Mr. Christie at his private geological cabinet, for the purposes of studying there the specimens of rocks, earths, and fossil organic bodies it contains; and he has no doubt that the fruit to Mr. Christie, from this study and application, has been the acquirement of knowledge suitable for the success of the pursuits and labors he may undertake, and for which this kind of knowledge is necessary.

Paris, 1*st March*, 1830. (Signed) Alex. Brongniart.

I hereby certify that Mr. Christie of Edinburgh attended assiduously, and with advantage, my course of Mineralogy at the Paris Royal School of Mines, in the autumn and winter of the year 1829.

(Signed) Brochant de Villiers,
*Member of the Royal Academy of Sciences, &c. &c.*

Paris, 5*th March*, 1830.

* Edin. Phil. Journal, 1831, p. 292.

From Bombay Dr. Christie proceeded down the coast by sea to Mangalore, and thence by way of Cannanore, Tellicherry, and Wynaad to the Neilgherries, whence, after a month's stay, he went to Madras. A sketch of his observations on this journey, contained in a letter to Professor Jameson, appeared in the Edinburgh Philosophical Journal for 1833, (p. 153,) and a more detailed official report, dated 5th September, 1832, submitted to Government, was considered worthy of transmission to the Court of Directors.

The following extracts are taken from this paper, which embraced observations on the geological structure of the country from Mangalore viâ Cannanore, Tellicherry, and through Wynaad to the Neilgherry Hills.

"The country on the coast, and probably extending to the foot of the Ghauts, consists entirely of the ferruginous claystone formation, which has been described by Buchanan under the name of laterite. It rests upon granite and gneiss, which make their appearance in the beds of many of the rivers, and very frequently on the sea coast. The laterite is of little importance in an economical point of view, except as a building stone; but is interesting when studied in relation to the phenomena of springs, the nature of soils, and its general effects upon vegetation. As far as I had an opportunity of examining the other formations, they appear to yield no mineral products of any value.

"A few miles to the north of Mangalore, and in connection with the laterite, I discovered an extensive deposit of pure porcelain clay, very closely resembling that of Limoges in France, of which the beautiful Sevres ware is formed. I need not point out the importance of this article. Being found close upon the coast, it might be easily shipped, and sent home as dead weight; or, with the assistance of Chinese workmen, it may hereafter become an article of manufacture in India. I also found it in considerable abundance, and of nearly equal purity, on the Neilgherries.

"The whole of Wynaad consists of primitive rocks, with a few patches of laterite, in certain situations, and great deposits of diluvium. In the latter (which consists principally of a reddish clay, with imbedded fragments of gneiss, granite, and quartz) gold is found. On the road between Nelliaal and Goodaloor, I observed some shallow pits in the diluvium, and remarking the similarity between this deposit, and those in which gold is found in other parts of the world, I made inquiries of the natives respecting it, and ascertained that they procured gold here by washing it in the rainy season. Having seen no geological account of the gold works in this part of India, I am not aware whether the metal has yet been found in its original matrix, or whether it is wholly derived from this loose transported deposit, or diluvium as geologists call it. The latter

forms a succession of low rounded hills, which are intersected by streams, and are every year partially worn down by the rains, which is perhaps the origin of the river gold of these districts.

"The Neilgherry hills are entirely composed of primitive rocks, consisting principally of granite, gneiss, a large quantity of earthy felspar, quartz, and a peculiar rock, which I would name Corundum rock, from its having that mineral as one of its principal ingredients. I have met with nothing analogous to it in Europe, and it occurs in great abundance; many of the hills being entirely composed of it.

" Some interesting questions connected with the parallelism and elevation of strata, and other branches of theoretical geology may derive elucidation from a more minute survey of the Neilgherries and the neighbouring country.

"The climate and agricultural features of the Neilgherries are more interesting, and more worthy of attention than their geology. These hills rising in the middle of the torrid zone to the height of nearly 9,000 feet, present every variety of climate, from that of the plains of India to that of England. The climate of their higher parts resemble the great intropical cities of South America,* which have become the centres of civilization in the new world, but is superior in one point of view, being never subject to those sudden changes and cold piercing winds which are occasioned by the vicinity of lofty mountains, some of which are capped with snow. The mean temperature of Ootacamund is rather more than that of London, but its annual range of temperature is very small, and it may be said that the season of spring reigns throughout the year. Yet though there is no winter the heat is never sufficiently great to bring the more delicate Europe fruits to perfection, and at this height we can only expect the successful cultivation of corn and vegetables. The valleys which have the height of from five to six thousand feet enjoy the climate of Italy—the climate of the vine, the olive, the orange, and the mulberry. The tea tree is cultivated in China between the latitudes of 27° and 31°, in a hilly country, and consequently in a climate probably of 70° to 73° of mean temperature. Such is nearly the temperature of the valleys in the neighbourhood of Kotagherry, and of many others along the eastern and northern faces of the hills. The cultivation of this valuable plant might therefore be attempted here, and with a much better chance of success, than in almost any country beyond the limits of China. A little lower down than this coffee might be produced ; its native habitation being on the sides of the lofty mountains of Yeman, and nearly in the same latitude as the Neilgherries.

* Quito is about 9,000 feet above the level of the sea, Santa Fé de Bogota 8,000 feet, Mexico about 7,400, and Caraccas nearly 3,000 feet. Although the latter place has been called an earthly paradise, its climate is changeable and unhealthy.

"But with all these advantages of climate, there are certain peculiarities, which, in some situations, prove most injurious to vegetation, and if overlooked in any schemes for the improvement of agriculture or horticulture in these regions, might mar our best exertions. These are 1st. The great intensity of the solar rays, when the sky is not obscured by clouds. 2dly. The great waste of heat from the ground, and from plants, by radiation in clear nights. The former will sometimes produce a heat of from 90° to 100° on the surface of leaves, flowers, and fruit during the day; the latter may subject them, in the succeeding night, to a degree of cold considerably below the freezing point. Few plants will bear so great a transition, and it is only to be avoided by a judicious selection of situations, which are not likely to be much under the influence of the two causes I have noticed; or, in the case of fruit trees and garden plants, by matting, and other contrivances. I need scarcely remark that it would be highly desirable to ascertain the meteorological characters of the different parts of the hills, before attempting the introduction of any new staples; otherwise, in a new country and without experience, success would be very questionable, and would rest only upon blind chance.

"Next to the climate of a country the most important object an agriculturist has to turn his attention to is the nature of the soils. One of the most remarkable features of the Neilgherries is the great depth of soil met with even on the highest hills. It has originated principally from the disintegration of the earthy felspar mentioned above, which is more or less mixed with sand, is coloured with iron, and, in some situations, contains numerous pebbles and small fragments of quartz, and of the other subjacent rocks. In some valleys it contains a certain quantity of vegetable matter; and in many places on the higher hills a thick coat of black vegetable stuff is found, principally formed of decayed ferns, and which might, perhaps, be usefully employed for the amelioration of other soils. The ground is, in general, easily worked, but being (as far as I can at present judge) entirely deficient of lime and of every description of salt, it will probably for certain kinds of cultivation, require to be highly manured, either with lime, with salts, or with vegetable and animal composts. Lime is clearly indicated as a manure for the Neilgherry soils; but the very circumstance which renders it so necessary, viz., its total absence amongst the subjacent rocks, makes it difficult to be procured. The lime which is employed in building is obtained from the kunker (calcareous tufa) which occurs in great abundance all over the plains of Coimbatore. Upon analyzing it, however, I have found it to contain a considerable quantity of magnesia, which renders it totally unfit for the purposes of agriculture, nothing being so injurious to vegetation as that earth. Were the distance not too great, shells might be brought from the coast to improve the soil, and sea salt and nitre, neither of which are very expensive, might prove useful.

"I need not insist upon the inducements, that these and some of the other

hills further south* hold out to English enterprize; since the Government have already by their many liberal and enlightened measures for their improvement, shown themselves perfectly confident of the immense advantages that must hereafter be derived from them.

"After having remained several weeks on the Neilgherries, I came to Madras by way of Trichinopoly and the coast, in expectation of finding some secondary formations near the former place. In this, however, I was disappointed, and found that part of the country to possess but little of geological interest. On the coast I was more fortunate, having discovered several curious deposits containing fossils, which are calculated to throw some light on the geological epochs of the Indian formations."

In addition to the matter set forth in the foregoing extract, Dr. Christie made considerable collections in zoology; including some interesting specimens of fresh water fish, crustacea and insects. Four cases of these, containing several hundred birds, a few mammalia, a small collection of fresh water fish from the rivers of Malabar and Wynaad, and some crustacea and reptiles, were forwarded to the Court of Directors by the Madras Government in October, 1832; as also a specimen of the porcelain clay above mentioned. Dr. Christie further projected an extensive series of meteorological observations to be made at the principal stations throughout this Presidency, in concert with similar observations to be carried on simultaneously in Bombay, Bengal, and Egypt. At his recommendation the Government of Fort St. George wrote home for 25 sets of meteorological instruments, and a code† of directions for conducting the observations, was drawn up by him, which was adopted and printed both by the Governments of Madras and Bombay.

It was the expressed wish of Dr. C. that he might be permitted to devote part of his time to a more minute survey of the Neilgherry Hills, so as to enable him to exhibit an accurate exposition of every thing connected with their physical geography; such as the height of their principal summits; the general height, form, and direction of their valleys; the climate of their different parts; the character and composition of their soils; the nature of their springs and streams, their vegetation and geology.

He also made preparations for the establishment of a small experimental farm, with a view to the improvement of coffee, tea, the

* The Pylney and Vurragherry Mountains which have probably an elevation of from 5,000 to 7,000 feet above the sea.

† Reprinted in Vol. 2, page 41, of this Journal.

mulberry, and other valuable products, at his own expense, a project which met with the warm approval of the Government. He, at the same time, pointed out the inadequacy of the allowances, scarcely exceeding 200 Rupees per mensem, allotted to him under the instructions of the Court of Directors. The justice of his representation was fully admitted by the Right Honorable S. R. Lushington, and he was permitted to draw an extra allowance of 500 Rupees per mensem, in addition to the regimental pay and allowances of his rank, already sanctioned by the Court; subject however to a refund of the excess, in the event of the measure not meeting with the approval of the Honorable Court, which eventually it did not.

These matters apparently so favorably arranged, Dr. Christie set out on his return to the Hills; proposing, in the first place, to commence operations there, and, in the ensuing cold season, to prosecute his geological researches as far south as Cape Comorin. He was not permitted however to realize any portion of his plans. On the 28th October, soon after his arrival at Ootacamund, an attack of jungle fever, contracted in passing through the Goodaloor jungle at the base of the Neilgherries, showed itself in a complete prostration of the whole nervous system; a symptom on which no remedy seemed to have the slightest influence; and he sunk on the 3d November, after seven days illness, at the early age of 32.

Little remains to be added to this sketch of one, the sudden close of whose career cut short a course of projected labors, ere an opportunity had been afforded of estimating the full value of the qualifications brought to bear upon them. To his friends he was endeared by many of those amiable qualities which are best appreciated in private life. To a kind and obliging disposition he added a singularly modest and unassuming deportment, and a mild and gentle address. His talents appeared to be rather solid than brilliant. Their application was characterized by patience, method, and perseverance; qualities of peculiar value in a field where neither collateral aid, nor facilities of research, were available. The value of these natural qualifications was enhanced by the nature and extent of his acquired advantages. In the words of Professor Jameson, "Dr. Christie's enthusiasm in the cause of science was of the purest and most enthusiastic nature; and his acquirements in natural history were never surpassed by any British Naturalist who visited India. He was master of the practical and theoretical details and views of meteorology, hydrology, geology, mineralogy, and zoology; and, in botany,

had all that practical skill required in collecting the species, and tracing them, with a view of their physical and geographical uses in the vast countries which, it was hoped, would have been explored by him."

"Mere collectors of objects of natural history," it was added, "will no longer satisfy either the E. I. Company, or the demands of science. Plants may be collected by a well instructed gardener, and rock specimens by a skilful lapidary. The naturalists sent to India ought to be of a different stamp. They should be armed at all points with the powers of general science; with a thorough knowledge of those instruments employed in investigating the phenomena of the atmosphere, and of the waters of the globe, and the physical constitution of the earth; an extensive and accurate *practical* acquaintance with the present state of the most important of the natural sciences, both in a general and economical view, viz., geology and mineralogy. And it will be very desirable, and indeed indispensable, that those entrusted with the natural history surveys in India, should be able to collect with judgment, and investigate with accuracy the facts presented by the animal and vegetable kingdoms."

These observations were penned in the expectation of a worthy successor being immediately selected to supply Dr. Christie's place. That hope has never been realized. It was to his voluntary and unaided enthusiasm alone, that the idea of any researches of the kind owed its origin. With his death the project expired. The value of such investigations is unhappily not recognized by British statesmen; and although India has exhibited repeated instances, among her adopted sons, of the rare and valuable qualifications which such pursuits demand, she has not yet reaped an adequate return from their employment in the direction best adapted for the public good. Of late a more enlightened spirit seems to have actuated the public men of England, and the illustrated scientific publications of the results obtained during the voyages of the *Sulphur*, the *Blossom*, and the *Samarang*, do credit to the liberality of the statesmen, under whose auspices they have appeared. Let us hope that similar enlarged views may, at no distant period, be extended to India.

## IV.—*On the Thermal Springs of Calwa and Mahanandi in the Kurnool province. By Captain* Newbold, *F. R. S., For. Mem. of the Philomathique and Geological Societies of France, &c.*

*Springs at Calwa.*

Lat. N. 15° 38′ and Long. E. 78° 16.′

These fine springs are situated about 1½ miles southerly from Calwa, a large and old village in the heart of the Kurnool district, Lat. N. 15° 38′ Long. E. 78° 16′ at the approximate height, by boiling point of water, of 1,100 feet above the sea. The village of Calwa lies at the S. E. extremity of an extensive horse-shoe shaped *cul-de-sac* formed by two hilly spurs stretching out from the main chain of the district towards the N. E. and E. N. E. The features of the country extending between the sides of this *cul-de-sac* are those of a plain intersected by rivulets about 5 miles broad at Calwa, but upwards of 11 where it opens upon the plain. The inclination is to the N. E. as indicated by the course of the rivulets, the principal of which take their rise in the hills forming the chief bend of the horse-shoe ;—and after traversing its whole length, about 15 miles, and passing the end of the S. E. range they take a sudden turn to the southward, unite and form the Khúnd river ; which, after watering the plains of Nundiaul Dhúr, falls into the Pennar near Camlapúr. The principal supply of the larger of the rivulets is derived from the thermal springs which have their origin near the head of a picturesque glen in the hills close behind and south of Calwa.

The first spring is about a mile from the village and is received into a stone tank ; its temperature is 89° 3. Fahrenheit. That of the second, which is choked with weeds, is also retained by a stone tank about 5 paces square and lies about ¼ of a mile farther up the glen : its temperature is 89°. That of the 3d and last, ¼ of a mile farther, and nearer the head of the glen, is 90°, temperature of air in shade 78°. This last from its greater copiousness, and higher temperature, is held more sacred than the rest by the Hindús, who have built near the margin a temple dedicated to *Iswara*, with the prefix of Bhúga, in compliment to the spring or bhuga. An annual játra takes place to the temple and spring. The latter gushes out from the rock on the side of the glen from several fissures, into a handsome stone tank about 9 spaces square. The water is beautifully transparent, taste-

less, odourless, and about four feet in depth. It abounds with fish held sacred by the brahmins. The surplus water of these thermal springs falls into a rivulet, which, taking its rise about 4 koss farther among the hills at Pendacull Yejarú, runs along the bottom of the glen from the higher part of which a *calwa* or aqueduct conveys the water to the lands around the village, whence its name. The temperature of this rivulet above the thermal springs is 82°, temperature of air in shade 78°.

Around the orifices through which the 1st and 2d springs escape are thick beds of calcareous tufa, deposited probably by the water of the springs. The surrounding formation is the blue limestone, associated with the diamond sandstone, which caps the former at no great distance from the springs, and in which I counted more than 40 old diamond pits. The glen itself, from the examination of its sides, appears to have originated in a fault in the limestone, which affords a vent to the subterranean waters which are perennial.

### *The Bhúga of Mahanandi.*

Lat. N. 14° 56′ and Long. E. 78° 16.′

These large, thermal, and perennial springs gush from the western base of the Nulla Mulla Hills which separate the Kurnúl territory from that of Cuddapah. The brahmins, ever vigilant to convert any extraordinary phenomenon of nature to their own ambitious policy of swaying the minds of the ignorant and superstitious mass, have for ages past appropriated this sequestered spot in the recesses of a jungle infested by tigers, and enclosed the springs within the walls of a massive stone temple consecrated to the great bull Mahanandi, and to the phallitic emblem of creative power the lingum.

The nearest village is that of Gázúpilly which lies about two koss in a southerly direction. Hence the road to the springs is a mere foot path through a succession of woodland belts increasing in density as the hills are approached.

The temple enclosing the springs stands in a dense jungle at the base of an outlier of the range also thickly wooded. Within its outer wall is a spacious quadrangle, in the centre of which, and immediately in front of the Vimána and principal shrine, lies a nearly square tank of lustration—revetted with stone, and having a small open temple (Mandop) in the centre, covering several small phalli placed on its stone base.

The tank is nearly square, 23 paces long by 22 broad. The depth varies from about 3 to 5 feet. It is filled by the thermal springs chiefly from the eastern side bubbling up from at least seventeen orifices. The principal jet has been contrived to leap forth from the mouth of a cow rudely sculptured in stone: and the quantity of water is said to suffer little sensible alteration in quantity. The temperature is 88° 7′ Faht. at the sources: 85° in the pool. Temperature of air in shade 78°; time $7\frac{1}{2}$ A. M. October. The approximate height of the springs above the sea is about 800 feet and the mean temperature of the surrounding country cannot exceed 80°. The water is remarkably clear, with a faint aqua-marina hue, and abounds in fish, some of considerable size—held sacred by the Sivaite priests. The supply is so abundant that after its escape from the pool it forms at once a considerable stream, part of which contributes to the supply of the great tank of Nandial about 10 miles to the westward of the springs. It is perfectly tasteless, contains a few bubbles of fixed air, and reddens litmus paper; oxalate of ammonia renders it slightly milky, nitrate of silver less so.

The formation of the surrounding country is the diamond sandstone and limestone invaded by trap dykes. Both diamond and lead mines lie in the vicinity.

There are two or three other smaller thermal springs in the thicket outside the enclosure of the temple: the temperature of which I was unable to ascertain at the orifices from their being choked up with vegetation. The temperature of the water in the pools they formed averaged about 85°.

I have little doubt that many other thermal springs exist in the diamond district, and throughout the line of dislocation of the eastern ghâts. Similar phenomena on a grander scale are remarked along those of the Himalayas, and western ghâts, where the earth and crust has been broken up from greater depths, and the deeper fountains of our planet have been thus brought up to fertilize its surface, and to administer to the wants of man and animals.

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## V.—*Description of a new species of Terrestrial Planaria, by* Mr. Walter Elliot, *Civil Service. With a Plate.*

During the rainy months of the N. E. monsoon, numbers of long dark coloured slugs may be observed crawling about, among rubbish

composed of old wood and decaying vegetation, in the gardens around Madras. The Natives call them leeches, to which animals they certainly, at first sight, bear a considerable resemblance ; while the long train of silvery slime which they leave behind them in their course, seems to invest them with an analogy to the snail. But the extreme simplicity of structure apparent on a closer examination shows that they cannot be included either with the molluscous or articulated animals. They belong, in fact, to a species of the extensive and ill-defined genus—*Planaria.*

The body is long, soft, somewhat depressed and unctuous looking, and ends anteriorly in a flattened semicircular disc. This, which at first sight might be considered the head, is wholly unprovided with the usual organs. There is no trace of eyes, mouth, or tentacula; but instead of the latter the exterior edge of the disc seems to be invested with extreme délicacy of touch, exhibited in its great mobility and its power of contraction and dilation when brought into contact with opposing objects. Viewed from above, whilst the animal is in motion it presents a constantly undulating edge, but the under surface seems to be composed of numerous fine papillæ, which are sedulously applied to every substance encountered in its course, and are protruded and withdrawn, according as any portion of the edge of the disc meets with a foreign body, thereby giving it a somewhat crenellated appearance. The only other organ observable, is a slit or opening in the middle of the lower surface, somewhat more than half-way from the anterior extremity, whence a white membranaceous cup or syphon is exserted, serving the animal with the means of extracting the nourishment, drawn from decaying vegetation, on which it subsists. It may with truth be said to carry its mouth in its stomach. But this provision has only been seen after death. During life the orifice itself is not apparent, even with the aid of an ordinary lens, and I have never seen the cup or sucker in use.

Its motion in crawling is somewhat undulating, and appears to be effected by means of a strong muscle extending the whole length of the under surface or foot, the anterior extremity being generally raised and employed as a feeler. When it reaches the end of a leaf or twig it stretches forward in search of a new resting place, trying in all directions with the disc-like head. If nothing offers it stretches forward until nearly the whole body is disengaged, and it is left at length hanging from the posterior extremity, by means of the viscid secretion, which, on other occasions, marks its track,

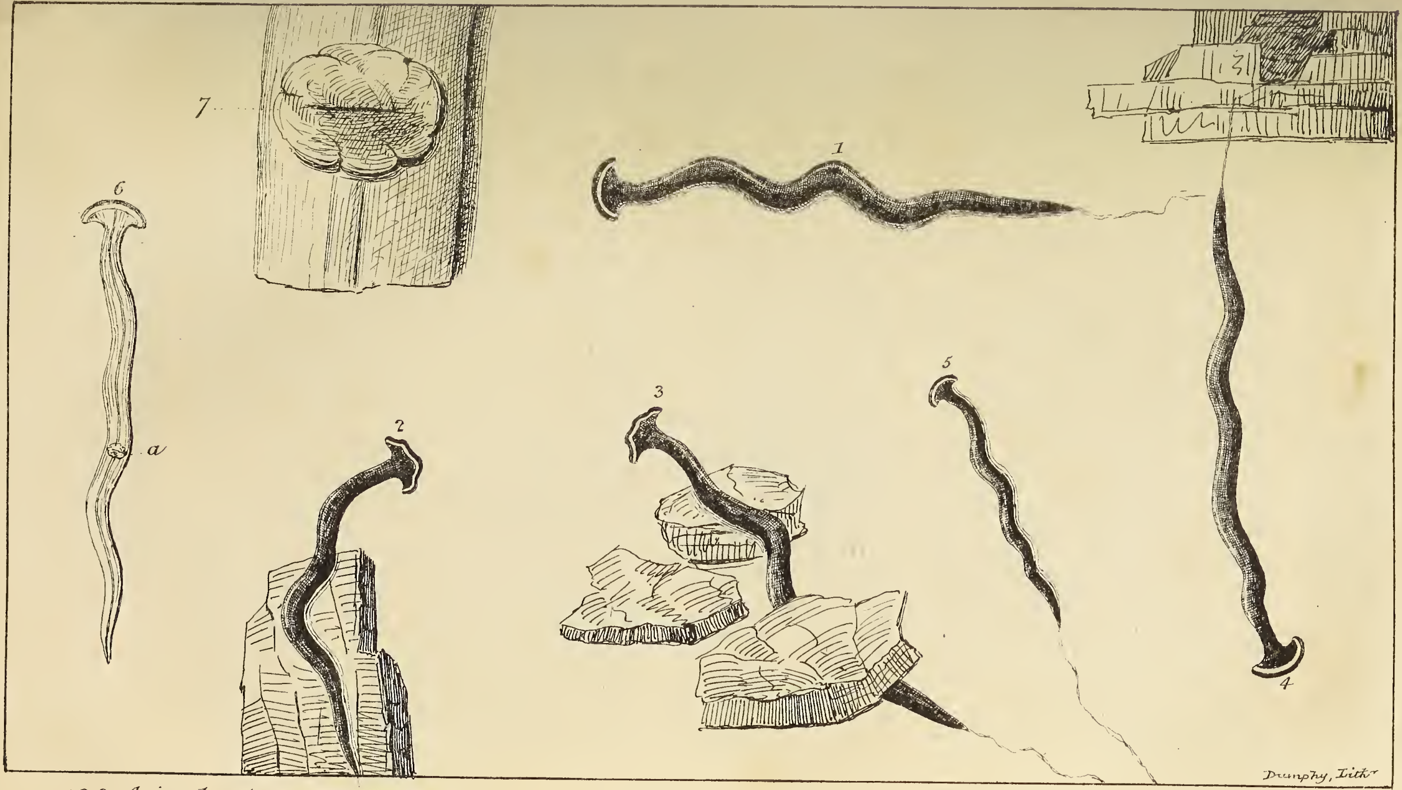
till it has descended to twice or thrice its own length, when the thread attenuates and breaks, and the animal falls to the ground. On meeting a smooth body, as a glass, &c., the lower surface of the disc is applied to it like a sucker, and the animal draws itself up, becoming thickened and corrugated by contraction, after which it disengages the head and pushes itself forward. It is impatient of heat, but not of light. When immersed in luke warm water it twists about as if distressed. In cold water, although exhibiting no signs of inconvenience, it always endeavoured to get out. When a bottle, in which some of them were kept, was placed in the middle of a basin of water to prevent their escape, they crawled out till they encountered the surface of the fluid, which at first they seemed unwilling to face; but, at length, after many attempts, and much apparent repugnance, some of the larger ones pushed forward their heads, retaining their hold on the cork by the tail alone, until they touched the edge of the basin on which the disc-like head was firmly fixed, and the body was drawn after it. One of them getting disengaged before it found the opposite side, tumbled about in the water as if helpless, until it again reached the cork on which it seemed gladly to take refuge, and returned to the bottle. Two or three others on finding the bottom of the basin below the cork, crawled along it under the water, appearing to find no difficulty as long as the abdominal muscle was in contact with the vessel. When immersed in cold water they invariably sought the surface of the bottle, crawling up the side, and clustering round the neck.

Although easily injured, and susceptible of division by the use of the slightest force, they are tenacious of life. When cut in two the portions continue to live and move as if unhurt, and each fragment would, doubtless, in time reproduce what was lost, so as to make a perfect animal. The aquatic *planariæ* are even said to reproduce their species by spontaneous division, as well as by depositing their ova. They seem to possess great powers of compression, effecting their escape through the narrowest apertures. On one occasion several of them, confined in a tumbler, contrived to squeeze themselves between the edge of the glass and the China plate on which it was placed.

This species of *Planaria* may be characterised as follows:

*Planaria lunata (n. s.)*

With a depressed, linear, opaque body dilating into a lunated disc at the anterior extremity; having no perceptible organs, excepting




PLANARIA LUNATA.

1. 2 3. Animal, as it usually appears.
4. Do. hanging from a piece of wood by the viscous secretion.
5. Young Animal.
6. Lower surface of the animal _ a. alimentary orifice.
7. Alimentary orifice, as seen after death, magnified.

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NATURAL HISTORY.

the alimentary orifice placed a little behind the middle of the body, as in the genus. Habits, terrestrial. Food, decaying vegetable matter. Length about 5 inches.

The colour is a uniformly dark brown, nearly black, except round the disc, which is white bordered at the very edge with pale brown. On examining the head (as it is most convenient to call this extremity) under a powerful microscope, to detect, if possible, the existence of organs of sight or touch, the surface of the paler portions around the white was observed to be sprinkled with dark irregular-shaped specks, which, to the naked eye, seemed the minutest points, but when magnified resembled well defined chromatogenous spots, in what appeared to be the cellular gelatinous mass of which the body was composed, the whole surface of which was covered with a moist secretion, apparently affording the material of the shining trail which it leaves in its course.

The genus *Planaria* originally established by Müller and afterwards restricted by A. Dugès on the aquatic species alone, was by Cuvier at first conjecturally, and afterwards on actual inspection, referred to the class of *Parenchymatous Entozoa* among the radiated animals, although, as he himself has observed,* *Planaria* and *Infusoria* afford almost the only instances among the animals brought under this great division, in which no trace of a radiated structure has been detected.

Their extreme simplicity of conformation, however, forbids the attempt to remove them to a higher place in the chain of being, but the great number of species discovered since the publication of the Regne Animal will probably lead to considerable modifications in the arrangement of the group. Some of the aquatic species described by Dr. J. Rawlins Johnson in the Philosophical Transactions† which were entirely aquatic, exhibited marks of a more perfect organisation in the apparent development of eyes and tentacula. They were also carnivorous and exceedingly voracious, preying even on their own race. Darwin also in the terrestrial species described by him notices numerous ocelli or black eye-like spots, variously distributed over the surface both above and below, which he considered to be imperfect organs of vision. In *Pl. elongata* however, a species from Tres Montes, in Western America, (lat. 46° 30′ S.) the largest he met with, and which approximates most nearly to ours, they were entirely absent.

* Regne Animal iii. p. 219.

† Phil. Trans. 1822, p. 437, ib. Plate xlix. fig. 24.

The genus *Herpa* determined by the late Rev. Lansdown Guilding* in the West Indies is evidently a kindred form. Swainson, misled by a desire to carry out his theory, eagerly caught at this discovery, and saw in it the first incipient development of the order of Phytophagous or pulmonary molluscs.† He even adopted *Herpa* as the first genus of his sub-family Limacinæ, making *Onchidium* a subgenus with *Herpa* proper. The common species of *Onchidium*, so common in the Carnatic, and which may often be found in the same haunts with our *Planaria*, will prove at once, to the most superficial observer, the anomalous character of this arrangement; the *Onchidium* being furnished with eyes, feelers, mouth, a mantle, a perfect internal system of respiration‡ and circulation, and complicated digestive and sexual organs.

* Zool. Journal, No. viii. p. 443.

"*Animal*, terrestrial, respiring by means of pulmonary vessels [pulmoniferum.] *Body* soft, sub-gelatinous, drawn to a point, elongated, contractile, depressed, much attenuated, anteriorly. *Mouth* at the extremity [apicule]—very minute, indistinct. No *tentacula*. No *mantle*. *Foot* the extent of the body, not well defined. With numerous ventral *glands* discharging a mucous secretion through transverse openings, and with a single larger one in the centre, from which a lobed cup [viscus] is rarely protruded, which is soft, pliable, and rather small."

"This genus is well marked and of a most unusual form. The Herpa glides along with the greater part of the body erect like a serpent, marking its track with slime, and directing its course, in the absence of feelers, by means of its long neck, greatly attenuated [or extended."]

"I have found the Herpæ on the decayed fronds of palms, on the summits of the highest mountains, and on the dry lands within a few yards of the sea: these always seeking cool places for concealment during the day, but never approaching the water, which, upon being thrown into, they instantly quit."

Mr. Guilding discovered three species in the West Indies, the largest of which, *H. gigas*, was 6 or 7 inches long. The only individual of the species, captured by him, escaped through a small crevice of the box in which it was placed, "from the strange power it possesses of contracting its body."—*Swainson. Appendix.*

† Lardner's Cab. Cycl. Malacology, pp. 161, 189.

‡ Guilding indeed in speaking of *Herpa* observes, "Genus Planariis facie quam "plurimum analogum, ut Limacides *respirationis* modo, locis moribusque, omni- "no affine." If the respiratory organs were indeed satisfactorily detected Herpa must be placed in a higher grade of the animal kingdom. But Guilding's description answers in all other respects so exactly to *Planaria*—terrestrial examples of which have been met with subsequently by Darwin and others in South America, Mauritius, Van Dieman's Land, New Zealand and other countries—that it is probable he was deceived in assigning this character. Dugés and Darwin suppose that the respiratory functions are exercised by means of vibratile cilia or some analogous structure disposed along the inferior surface or foot of the animal.—*Annals of Nat. Hist.*, V. xiv. p. 243.

Planaria lunata seems to be extensively distributed. I have observed it for several years past in various parts of the Carnatic, both inland and on the coast. Dr. Jerdon has met with it in Malabar, and Dr. Walker informed me it was found in Assam.

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## VI.—*Account of an attempt to form an Artesian Well at Tuticorin. From Official Papers.*

Amongst the numerous benefits for which we are indebted to the science of geology, the power of indicating the probable site of springs of water is not the least important, and especially so with reference to agriculture. The manner in which water is supplied from the sea, through the medium of the atmosphere, to fertilize the earth by rains, and to furnish a perpetual supply of water for the maintenance of springs and rivers is generally known, but the cause and origin of those subterranean springs, the locality of which it is the province of geology to indicate, are more obscure. Excess of water in large tracts of land can be permanently drained at small expense by methods which entirely depend on a consideration of the geological substrata; and the obtaining of a supply of water by means of perforating the earth depends also upon the same foreknowledge. An instance of this want of knowledge occurred a few years ago in England. A gentleman residing in Sussex having witnessed the successful attempts to procure water, by means of Artesian boring, in London and its environs, was desirous of having the same operation performed on his estate. After boring to a great depth, and undergoing considerable expense, he was informed that the project was hopeless : a result, of which any one conversant with the different geological formation (the Wealden sand) of that part of the country, could have informed him.

The modern method of obtaining water by means of perforations a few inches in diameter may, in time, supersede the more expensive mode of sinking wells ; but the effort may prove fruitless, unless the geological structure of the district has been thoroughly investigated. A stratum of chalk of a green colour indicates water, and if the chalk is found mixed with clay and of a dark colour, it is a still stronger indication that the sheet of water, which it is intended to meet, is near. Some of these subterranean waters have an enor-

mous upward pressure. One at Roussillon rises from 30 to 50 feet *above* the surface. At Perpignan and Tours the water rises up with so much force, that a cannon ball placed in the pipe of an Artesian well is instantly ejected by the ascending stream. It is from this circumstance that these wells are called in Lincolnshire " Blow wells," and where they appear to have been as common as at Artois, from which place they derive their name. The Artesian well at the Royal Hospital, Haslar, furnishes more than 59,000 gallons per day, and is remarkable for its running through a stratum of shingle and running sand 125 feet thick, and full of salt water affected by the tides, but which has been stopped out. The whole depth is 156 feet. The deepest Artesian well with which we are acquainted is that at Grenelle, which is 1,584 feet in depth, and affords 500,000 gallons per day. To a country like India, where the supply of water is so variable and uncertain in many parts, the construction of these wells might prove of incalculable advantage, as they may be made at a much less cost than the usual plan of constructing wells of large diameter. The largest well that has ever been constructed is that made by Clement VII. at Orvieto, through solid rock. Its depth is 265 feet, and diameter over 80 feet. We mention this to contrast the immense labour and expense that must have been incurred, with those of the well at Grenelle, and which latter furnishes a larger quantity of water, with less trouble, and at greatly less cost.

We have again to furnish an account of another attempt to obtain water by an Artesian boring, of which we likewise furnish a section. We think that, in preference to the jumper, recourse might be had to the drill used in Hunter's stone boring machine, wherein sand stone is perforated with ease. A perforation first made with this instrument of about 2 or 3 inches in diameter would pave the way for a much more effective use of the jumper ; as stone is much more easily broken *around* a hole in it, than when the stone is in the solid.

The site selected for the experiment was on a neck of land north of the town, and within 50 yards of the sea, in a private compound, the property of Mr. Mather, at whose expense the experiment was carried on. Operations commenced on the 15th April, 1846, and were continued at intervals between that and the 21st July following, after which nothing was done in consequence of Mr. Mather leaving Tuticorin. An excavation 12 feet square by 4 feet deep was first made in the sand. The triangle was then fixed in its place, and a

stage of planks formed for the people to work on. I should mention that salt water was met with at the above depth. The next thing was to fix one of the 6 inch diameter iron pipes in the centre of the pit, after which was done the boring commenced.

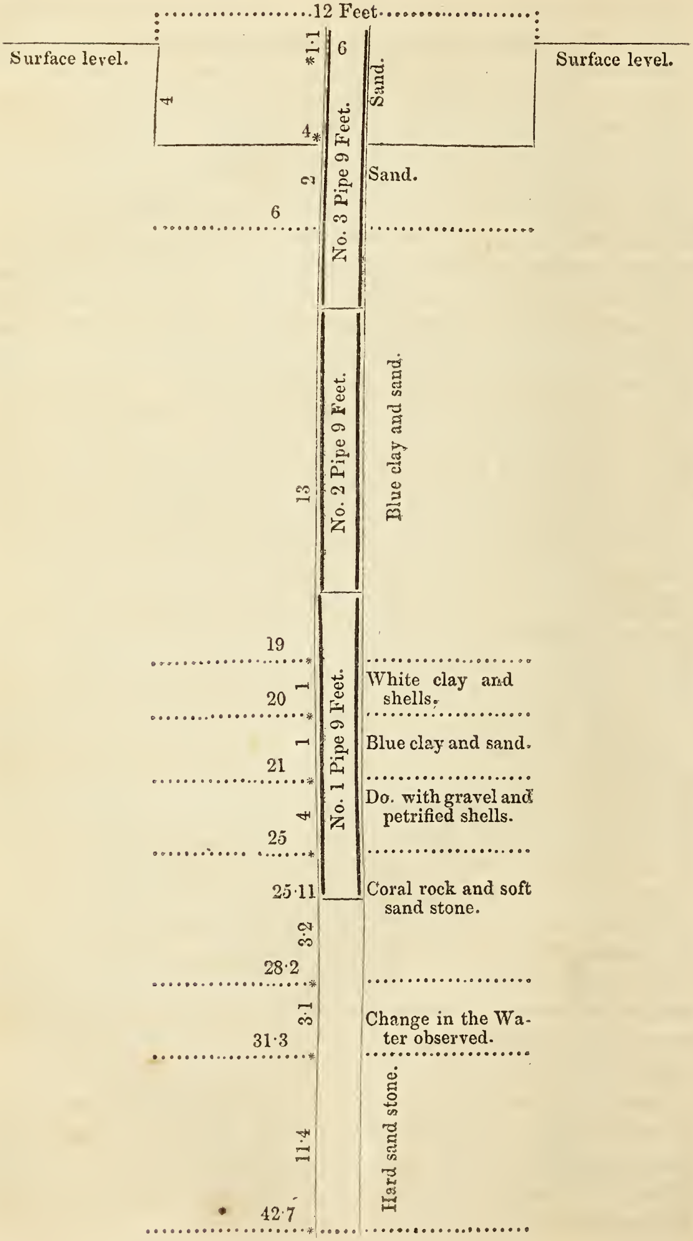
The nature of the soil bored through (sand and blue clay mixed, the former, however, predominating) made it advisable to use an auger, and occasionally an instrument termed a shell, furnished with a valve opening upwards to raise the water as well as sand from the interior of the pipe. Every time the auger was removed the head of the pipe was struck with a heavy wooden rammer, to assist its descent, and in this way 6 feet of pipe were inserted the first day. On the 16th the second pipe was fitted on (each pipe being 9 feet in length) and driven down to the depth of 5 feet, making 14 feet in all. At this depth there was no difficulty in keeping the bore free of water by means of the valve shell. The soil brought up continued to be of the same description as before, but the ingress of water was much less than on the first day. On the 17th, the second pipe was driven to a level nearly with the surface of the water in the pit, or about 19 feet from the surface of the ground, at which depth a much firmer clay, with shells intermixed, was met with. It was found necessary to loosen this a little by means of the screw auger, before the common one was introduced, and even then some difficulty was experienced in working through it. The percolation of water from below was very trifling. A small crabwinch was used for raising and lowering the boring rods as occasion required. The party engaged on the work consisted of 16 men, 8 of whom were employed alternately in turning the auger and raising the rods. From the 17th to the 27th idem very little progress was made in the bore, owing partly to the heavy rain which fell in the interim, and partly to the breaking of the iron pin connecting the upper and lower boring rods, whereby the latter was left at the bottom of the bore, and had to be drawn up separately. In doing this, the rope, to which the lifting instrument was attached, broke, and both fell to the bottom together. A long iron bar hooked at one end was then introduced into the bore, and by its means the broken part of the rope, with the instrument attached, was drawn up. The next attempt, with a stronger rope, was successful in withdrawing the lower rod from the bore, and a new pin being inserted the boring proceeded. At the depth of 20 feet a whitish clay with

shells intermixed was met with. To this succeeded one foot of the blue clay and sand before described, then 4 feet of the same with gravel and petrified shells. By the evening of the 28th idem the pipes had been driven to a total depth from the surface of the ground of 24½ feet. The last 2 feet were driven with a heavy pipe driver, weighing about ¼ ton, and let fall from a height of 4 or 5 feet. Nothing less than this could overcome the friction on the sides of the pipe, and force it through the subsoil. It should be mentioned that when the pipe had descended below the layer of blue clay and sand, the ingress of salt-water from beneath became much greater, and could not be kept under as before by the use of the shell. It was necessary, therefore, to force the pipes down into a less pervious stratum, in order to keep the bore as free as possible of salt-water.

In boring through the last 4 feet the triangular jumper was substituted for the auger, and the shell used for clearing the bottom of the bore every now and then, as occasion required. Next came coral rock and soft sand-stone, through which the jumper made about 6 inches in the hour, so that by the evening of the 29th idem, the total depth of the bore, reckoning from the surface of the ground, was 28 feet 2 inches, or 2 feet 3 inches below the bottom of the pipe, which latter was driven to 25 feet 11 inches, on the last mentioned date. The S jumper appeared to answer better than the triangular one. From the 29th April to the 5th May the boring was continued through sand-stone of a harder description, to the depth of about 6 feet below the bottom of the pipe, but great difficulty was experienced in keeping the bore free of water, which rushed in below the pipe almost as fast as it was drawn out above. It was found impracticable to drive the pipe any further, owing to the stratum of sand-stone on which it rested. It was observed that the water drawn up from the bore was less salt than before and there was reason to infer, therefore, that there was fresh water mixed with the salt, and that if we could but keep the latter out, our labour would not be in vain. To effect this it was proposed, after the jumper had bored another foot or two, to insert a smaller size pipe within the one first driven, and to lower it into the bore formed by the jumper, and then to force down a quantity of stiff clay between the two pipes so as to cut off the communication, and stop the rise of salt-water from below. In boring, however, the additional 2 feet an accident occurred, whereby a piece of the pipe, it was supposed, was broken off and remained at the bottom of the bore. A few small pieces of iron were

brought up in the shell, and rather than lose time and spoil the jumpers in working through this, it was deemed advisable to commence a new bore in the immediate vicinity of the old one. The new bore was accordingly commenced on the 25th May, on which day the auger bored 18 feet below the surface of the ground, and pipes were inserted to the depth of 12 feet. On the 26th the auger, jumper, and shell together bored a further depth of 6 feet, making 24 feet in all ; and the pipes were driven 10 feet or 22 feet from the surface. On the 27th the jumper and shell only were used, the former to break through the hard coral rock, and the latter to clear the bore from time to time. On the 28th 4 inches only were bored through hard rock with the jumper. On the 29th the pipes were driven 6 inches, and it was found that the sand filled in the bore from the bottom to the height of 6 feet. A quantity was raised with the auger, when it filled again. On the 2d June the pipes were driven 2 feet, and the sand again withdrawn. The jumper this day made 6 inches through hard sand-stone. On the 4th a further depth of 4 inches was gained, and in this way the boring continued with occasional interruptions till the 20th July, 1846, by which date a total depth from the surface of 42 feet, 7 inches, was attained, and the water brought up was much less salt. On the 21st July, the large pipes were filled with clay and one of smaller size inserted within. Here the experiment ceased, in consequence, as before stated, of Mr. Mather's sudden removal from Tuticorin. It is the firm belief that fresh water exists at the depth to which the boring had been carried, and that if it were possible to build out the salt-water, a sufficient quantity of fresh might be obtained to supply the port and shipping, and that in the immediate neighbourhood of the beach, instead of bringing it from a distance of 2 miles in chatties, as at present. It was intended, had the first experiment fully succeeded, to have recommended the construction of a well in the centre of the town, near the Post Office and within a short distance of the beach, for the convenience of all parties. The change in the water was first noticed at the depth of 31 feet, 3 inches, after the jumper had worked through about 5 feet of the sand-stone rock, so that if a well were constructed it would require to be built from this depth upwards to keep out the salt-water.

With so little data to go upon, it is difficult to frame an estimate of the probable expense of such a work, but it is supposed that Rupees 1,000 would be sufficient, provided Government supplied pumps to keep the excavation free of salt-water during the progress of the work.


12 Feet
Surface level.
Surface level.
*1·1
6
4
4*
Sand.
No. 3 Pipe 9 Feet.
2
Sand.
6
No. 2 Pipe 9 Feet.
13
Blue clay and sand.
19
No. 1 Pipe 9 Feet.
1
White clay and shells.
20
1
Blue clay and sand.
21
4
Do. with gravel and petrified shells.
25
25·11
Coral rock and soft sand stone.
3·2
28·2
3·1
Change in the Water observed.
31·3
11·4
Hard sand stone.
42·7

## VII.—*Analysis of Mackenzie Manuscripts.*

*(Supplement continued.)*

### B—TELUGU.

### *A—Palm-leaf Manuscripts.*

I.—1. *Mādhava Bhyudaam*, or adventures of *Vishnu*, No. 97, C. M. 381. The principal subject of this poem, in the *Padya Cavyam* metre, is the ten metamorphoses of *Vishnu;* composed by *Mādhavuduru Guruvaya Kichchaya*, son of *Guruvaya* of the house (or lineage) of *Mādhavuduru*, at the desire of *Nāgarāja*, son of *Kariappa*, a local chief of the Nellore district.

In the opening portion, there is an account of *Nandirāja* of *Nandivaram*, who by favor of a Brahman had acquired the power of visiting *Cāsi*, or Benares, by an aerial transit; and was accustomed to take his wife with him: until by a transgression of rules as to a certain four days observance, occasioned by his wife, he lost the said power of making aerial voyages. However he regained the faculty by making largesses to *Brahmans*, leading to the influx of a colony of Brahmans to his town, or capital, at *Nandivaram*. This part is introductory.

The patron of the poet dictated as his subject the *avatars* of *Vishnu;* which are then poetically narrated.

1. *Matsya.*—The rescue of the *Vedas* from *Sòmacāsura.*
2. *Curma.*—The churning of the milk sea, by means of *Mt. Mandara*, to produce nectar for the celestials.
3. *Varaha.*—The killing *Hiranyacsha*, who had rolled up the earth like a mat, and carried it away.
4. *Narasinha.*—The killing *Hiranya casipu.*
5. *Vāmana.*—The trampling upon *Bali-chakraverti.*
6. *Parasu Rāma.*—The destruction of the *Cshetriyas.*
7. *Rama Chandra.*—The destruction of *Rāvana.*
8. *Bala Rama.*—The story of the elder brother of *Crishna.*
9. *Crishna.*—His early adventures; marriage with *Rucmeni;* and other actions.

The composition of the work is stated to be good. It is very full of Sanscrit words, or derivatives.

Remark.—The story of *Nandi* of *Nandivaram*, heretofore occurred in a *Mahratta* book, with a prevailing similarity to the account in this one; its chief use is with respect to the past history of colonizing Brahmans. Of course the account of *Vishnu's avatāras* can offer nothing new.

Note.—The Manuscript is complete, and of recent appearance. It is entered in Des. Cat., Vol. 1, p. 329, Art. 35.

2. *Lacshmi-vilāsam*, or an account of *Lacshmi.* No. 81. Countermark 380.

Reference to the second *avatāra*, or churning the sea, in the midst of which *Lacshmi* was born, or produced; with many other valuable things. A description is given of her form, perfections and accomplishments; with the general statement of her becoming the wife of *Vishnu.* Other circumstances, connected with the churning of the sea, are stated. There is also a genealogy of the lunar race, of the line of *Janamejaya.* The poem is in the *Padya Canyam* metre, with a variety of included metre; written by *Rayasa-vencata-pati,* who states that he was directed to write it by a vision of *Vencatapati* (the name of *Vishnu* at *Tripeti*) appearing to him in a dream. It is complete in five sections of comparatively recent appearance; the last leaf only being very slightly damaged. It is entered in Des. Cat., Vol. 1, p. 329, Art. 34.

3. *Rādhā-mādhava Samvādam*, or difference between *Radha* and *Crishna.* No. 63. Countermark 398.

Some panegyric of the poet's patron, a local chief, is given. The statement of the tale, by a strange anachronism, is said to be by *Savunaca rishi* to *Dasaratha.* The subject is *Crishna's* desertion of his wife *Rādha,* by reason of his other marriage with *Rucmeni.* A parrot is sent by *Rādha* to *Dwāraca,* in order to discover what had become of *Crishna;* giving occasion to much poetical hyperbole, in a description of the person of *Crishna,* his court, and the like matters. Of such a poem a brief indication is amply sufficient. The book is complete in three sections, composed in the *Padya Cavya*, by *Vencatapati*, son of *Tiru Vengah āchārya.*

One or two palm leaves at the beginning, and a few at the end, are damaged by insects.

Note.—It is entered in Des. Cat., Vol. 1, p. 33, Art. 45.

4. *Devaci nandana Satacam*—a poem concerning *Crishna.* No. 73. Countermark 360.

This is a small manuscript, and contains one hundred and two Stanzas of the *Padya Cāvyam* kind. Some other verses, as also the poet's name, usually given at the end, are wanting. Its subject is *Crishna*, the son of *Nandana* and *Devaci*, and relates to his early life, his youthful sports, and his marriage with *Rucmeni;* but does not enter into the warlike actions of this hero. A thousand names are ascribed to him, and the result of meditation, upon his excellencies, is stated to be future beatification. Such statements indicate extraordinary infatuation; but I usually spare remark. The book is a little damaged by insects.

It is entered in Des. Cat., Vol. 1, p. 324, Art. 19.

5. *Nandala Crishnama rāju vamsavali*, or genealogy of *Nandala Crishnama*, a chief. No. 135. C. M. 319.

This is a mere fragment of a work, which I understand, if complete,

would contain six *asvadas* or sections, under the title of *Kālī purnōdaya.* This M. S. has merely fourteen palm leaves from the commencement; all the remainder being wanting. It contains a mention of the family, and immediately preceding ancestors of a local chief, named *Crishnama;* and the prefix *Nandala* intimates a town of that name, either as his birth-place, or chief town. There appears to be nothing in it of general consequence.

It is entered in Des. Cat., Vol. 1, p. 306, Art. 9.

6. *Surabhāndèsvara*, legend of a *Saiva* image. No. 50. Countermark 496.

Another copy. No. 51. Countermark 410.

This is a tale concerning a *Brahman*, who became infatuated by the venders of spirituous liquor, and justified himself by the example of *Crishna.*

In the end he was concealed, and stifled to death, in a jar of ardent spirits. Owing to the *Brahman's* former merit, his dead body, and the jar, were transformed into a *Saiva* emblem: now said to be worshipped at Benares as *Surabhāndèsavara;* or the *Spirit-jar-god.* It is added that those who bathe in the river there, and hear this book read will go to *Cailasa.* The poem was written in *Padya Cavyam* metre, by *Ghotlie* son of *Yellaiya.*

The copies are both very incomplete; so much so as to render any minute specification needless. Notwithstanding the gravity of the conclusion, which is affected, the whole is a lampoon upon the *Brahmans;* whether votaries of *Crishna* or *Siva*; and the conclusion seems to be a sarcasm on the close of most *purānas*; the simple hearing of which is generally said to ensure beatification.

Both copies are entered in Des. Cat. Vol. 1, p. 339, Art. 58.

7. *Cailasa nat'ha Satacam*, a poem on the lord of *Cailasa.* No. 88. Countermark 371.

There is a scrap of three palm leaves containing a few stanzas on the war between *Rāma* and *Rāvana.* The *Satacam* follows having the beginning, but incomplete at the end. It is copied in different hand-writings; and the whole has an appearance of age. Some of the leaves are broken by wear. The subjects are—a reference to *Siva* assuming illusory forms, mingled with matters relative to intercourse of two classes of human kind. Homage to *Devi*, the consort of *Siva.* The panegyric of *Timma Bukha rāja*, including his ancestors, tribe, and other eulogistic matters. There follows a philippic against the *Cōmti* tribe, or traders and bankers. The remainder is wanting.

NOTE.—The Manuscript is entered in Des. Cat. Vol. 1, p. 327, Art. 27, but the brief entry is defective.

8. *Ganita Trirasecam.* No. 115. Countermark 497.

A fragment of three old palm leaves, of a work on Arithmetic; which is large when complete.

Note.—It is entered in Des. Cat., Vol. 1, p. 356, Art. 23.

9. *Crishna raya agrahāram cheruvu purvottaram.* No. 126. Countermark 311.

The title of this Manuscript implies a record concerning a water reservoir, attached to a *Brahman's* alms house, built, or formed by *Crishna-rayer.* The book however has four parts; the subjects of which appear to be distinct.

1. The first part seems to be the one denoted by the general title. In consequence of bursting of the banks of three reservoirs belonging to an *agrahāram*, the *Carnams* or *Brahman* accountants of the district, applied to *Crishna-rayer* for aid, which he liberally afforded. In this part there are only three small palm leaves, a little injured by worms.

2. A fictitious tale in Native Telugu respecting *Acása raja*, the son of *Mitra-verma* of an imaginary locality termed *Narayana-vanam.* It is written on six palm-leaves, recent, and in perfect preservation.

3. A sort of lampoon on *Brahma.* One day when *Brahma* and other celestials, were going to *Cailasa*, they passed by *Subrahmanya*, to whom *Brahma* only paid no homage. At this *Subrahmanya*, being angry, demanded the reason; when *Brahma* replied that he did not worship him on account of his youth. *Subrahmanya* then took from him his power and dignity, as creator, and told him (*Brahma*) that henceforward he would exercise this power himself. *Brahma* besought its restoration in vain. On going to *Cailasa*, and stating the case, *Simudi*, or *Siva*, instructed him to repair to a certain hill at *Conjeveram*, and there to perform penance, when *Subrahmanya* would come thither, and restore to him his power of creating: the direction was obeyed; and the restoration of power followed. This pasquinade is written in Native Telugu, on seven palm leaves: and has an appearance of being taken from the *Conjeveram St'hala puranam*, which has many such sarcasms directed against *Brahma* and *Vishnu.* It resembles accounts contained in local legends at *Pyney* and *Tripeti.*

4. The legend of *Casyapa* and his two wives *Diti* and *Aditi*, with the myriads of their posterity; the building of a city in the air, as the capital of *Indra;* and similar legendary matters, taken from the *Puranas.*

This part is written on twelve small palm leaves, rather old, and injured a little by insects, and use.

Note.—The Manuscript is entered in the Des. Cat., Vol. 1, p. 301, Art. 3; but the brief notice given has reference to the first, and smallest part of the book.

10. *Calādharo-pakhyanam.* No. 71. C. M. 372.

The title is derived from epithets applied to *Vishnu*, and a word denoting *elucidation.* It is a production in ornate verse by *Vencatapati* of the *Nandavaram* race, professed to be recited in the hall of *Timma raja*, as I suppose at *Penna conda;* and his genealogy of course is given, with laudatory panegyric. The remaining and principal subject of the poem

is an extravagant romance, with respect to which it may be quite sufficient to refer to the adequate, though brief notice, in the Des. Cat., Vol. 1, p. 327, Art. 28.

NOTE.—The Manuscript is quite fresh in appearance and uninjured. Out of six books of the poem, when complete, there is only one book contained in this copy.

11. *Vipra narāyana cheritra.* No. 134, C. M. 302.

The subject of this poem, in the *divi pada* measure, is either to frame an apology for the theft of a valuable utensil from the shrine at *Srirangham* near to Trichinopoly; or else to feign that circumstance, as a *vehiculum*, for matter of a gross, and sensual character. The period of occurrence, as to the leading incident, is placed in the time of a *Chola raja*, no name being specified. It seems to me a work merely of invention; though some such incident may very likely have occurred. From various books, thefts by servants, in different fanes, may be observed to be no uncommon occurrences. There is quite a sufficient entry respecting this Manuscript in Des. Cat., Vol. 1, p. 347, Art. 67, to which I refer.

NOTE.—With the exception of the first leaf, on which the name of the writer would appear, which is now wanting, the poem is complete. The appearance of the Manuscript is old, it is untouched by insects; but a little broken at the ends, by wear or usage.

12. *Capôta-vācyam.* No. 129. Countermark 375.

The subject of this composition in the *vāchana-cavyam*, is a sort of fable stated to have been delivered by *Rāma* to *Sugriva*, when he needed the help of the latter, and his foresters, in the war against *Rāvana*. The substance is the willing devotedness of a dove that gave itself to death, when its mate had been previously killed, and some similar matter. The moral of the fable seems to be to urge the exposure of life in the recovery of *Sita;* both the life of *Rāma* and of *Sugriva*, with his sylvan followers.

NOTE.—The first leaf and writer's name are wanting: the remainder is complete, and damaged only by wear.

13. *Brahma-nāyaki-dandaca.* No. 123. Countermark 468.

The *dandaca* is a species of composition of the plainer kind. This Manuscript is by *Siva ramâiyer* of *Tiru-corna-mane*, a village in the *Tondiman's* principality near Trichinopoly. The subject is the eulogy of the *Sacti* or local goddess of the *Saiva* class, of which the writer was a votary. It is quite a recent copy, and in the large and rude hand-writing apparently of a school-boy. Any entry in the Des. Catalogue is not apparent; though it has the usual marks of classification.

14. *Tiru-calacodi-purvottarum.* No. 125. C. M. 291.

This is a fragment of six small palm leaves. It is a local legend of a *Saiva* shrine, in the extreme south; a site of military operations in the early part of this century: according to which *Agastya* and *Pulast'hya*

were ardent votaries of *Siva;* insomuch that the latter cut his body to pieces, and the former threw himself into a pit of fire, in testimony of entire devotedness. The account however remains very imperfect.

An entry occurs in Des. Cat., Vol. 1, p. 278, Art. 24.

15. *Keyura-bahu-charitra.* No. 44. Countermark 377.

This Manuscript contains a series of tales made to rest on a fictitious supposition of the minister of *Keyura-bahu*, a local chief (alleged to be of the *Surya vamsa*) narrating persuasive arguments to *Ratna-Sundar* daughter of a king, or chief of the *Chandra-vamsa*, to induce her to marry the said *Keyura-bahu.* From the genealogy it would appear that *Keyura-bahu* is intended to designate a petty ruler descended from the *Reddis*, who before had held extensive authority in *Telingana.* There is no historical value attaching to this document.

NOTE.—It is deficient at the end: the preceding portion is regular from the beginning: it is rather an old M. S., and damaged by worms; needing however only a degree of care for its preservation.

16. *Narukur-pariyātam.* No. 89. Countermark 687.

A drama by the poet *Narrayana Appava* of the village of *Narukur;* composed in the *Padya-cavyam* measure, and dedicated to his patron *Bangaru Yachama Nayadu*, the ruler of the *Vellugotivāru* race at *Vencatagiri.* The subject is ornamental and fanciful. *Crishna* when ruling in *Dwāraca-puri* had eight wives, to one among whom, that is *Rucmeni*, he presented a flower of paradise; which excited the jealousy of *Satyabhauma*, another of his wives, who entreated him to procure for her the flower named *Pariyata*, and to satisfy her *Crishna* sent to the paradise of *Indra* for the said flower; which was procured and given. The object of such a drama, of course, was to please the poet's patron; and get a reward.

NOTE.—The Manuscript is a fragment, and has sustained damage by breaking of the leaves.

It is entered in the Des. Cat., Vol. 1, p. 332, Art. 41.

17. *Chandra-bhānu Cheritra.* No. 53. Countermark 354.

A tale composed in the *padya-cavyam* by *Mallana*, at the desire of *Vencatapati*, son of *Tirumala-rayudu* (of *Chandra-giri* I believe.) The subject is taken from the family of *Crishna.* By *Rucmeni* he had a son named *Manamudu*, and by *Satyabhauma* a son named *Chandra-bhanu.* The latter is the hero of the poem; and there is also a heroine. The subject being suggested from a passage of the *Bhāgavatam* is amplified in Telugu verse.

NOTE.—This Manuscript is complete, of recent copying, and in perfect order. It is entered in Des. Cat., Vol. 1, p. 322, Art. 13.

18. *Bhogini-Dandaca.* No. 80. Countermark 350.

The *Dandaca* is a species of composition that has been elsewhere describ-

ed: it is a sort of homage to some *Sacti* of *Siva*. Such is the case in this instance, *Bhogini*, being a local name of an evil goddess. This *Sacti* was long worshipped by *Sarvajna-Singha-rao*, a local chief; and, at length the said goddess appeared to him in a vision, and told him she wanted blood. To appease her, he cut his own throat; and the evil demon first being gratified by drinking his blood, then touched the wound and healed him. The poem was composed by *Bommanapotu rāja*, a writer of eminence in Telugu literature.

NOTE.—The Manuscript is merely a fragment; very little is written on each leaf in a large hand-writing.

It is entered in Des. Cat., Vol. 1, p. 321, Art. 10.

The real character of the book is therein veiled.

19. *Lacshana-Chudāmani.* No. 92. C. M. 486.

This is a philogical work, on the formation of the *Telugu;* containing also notices of various *Telugu* works of reputation. It seems to be not merely a book on the art of writing; but also a directory, and critical estimate of the value of standard works. Besides it contains an account of the *Niyogis*, or secular Brahmans; whom the M. S. books of this collection show to have obtained extensive settlements, and power, in the northern Circars, under the *Ganapati* and other princes. As a work of reference this Manuscript is stated to be valuable. It is composed in the *padya-cavyam* by *Casturi Rungaiya* son of *Crishnaiya*, of what town or place does not appear in the work. It is old in appearance: but is complete, and very slightly injured.

NOTE.—It is entered in Des. Cat., Vol. 1, p. 353, Art. 3.

20. *Rājavetti. Vira Bhadra dandacaveli.* No. 54. C. M. 294.

This is only a fragment of a legend of the fane of *Vira-Bhadra*, at *Ragavetti*, near Cuddapah. It is represented to be a very ancient foundation; greatly enriched by donatives from many kings. The names of *Crishna-rayer*—and *Achyuta-rayer* are mentioned among others. On the country coming under the English, the then Collector of the Ceded Districts, Mr. Munro, (afterwards the Right Honorable Sir Thomas Munro, Bart., Governor of Madras,) had the grants investigated, and restored to the fane, all its ancient rights and privileges.

The work when complete I am told is a large one. It is entered in the Des. Cat., Vol. 1, p. 279, Art. 25.

21. *Ambarisha Cheritra.* No. 47. C. M. 339.

A poem in five sections, in the *Padya-cavyam* metre, composed by *Ranga-Sayi;* as stated by the express command, and inspiration of *Rama*. It is however a borrowed tale from the *Purānas*, respecting *Ambarisha*, king of *Saketa-puram*, that is *Ayoddha*. The leading incident is the said king's going out to hunt in a forest, meeting there with the daughter of *Casiyapa*, and ultimately marrying her. Subsequently he devoted himself to a life

of abstract devotion: and the *Chacra* of *Vishnu*, effecting an interposition in his behalf, took him to the other world.

NOTE.—The five sections are complete; and the Manuscript is in good preservation. An entry occurs in the Des. Cat., Vol. 1, p. 317, Art. 2.

22. *Charu-chandrōdaya*. No. 86. Countermark 357.

A romance narrating the adventures of *Charu-chandra*, a son of *Crishna* by his wife *Rucmeni*. The adventures are of the wildest, and most extravagant kind. The leading outlines are—a hunting excursion—meeting with a *rācshasa*—visit to the superior world of *Brama*, and then to the world of *Indra*—whence he obtained a celestial car—he then fought with and overcame the *rācshasas*. Subsequently he formed an attachment and married; which is the conclusion of the poem. This is written in *Padya-cavyam* metre, by *Chennama raja*.

NOTE.—The Manuscript is old, the leaves are broken at the edges; but the writing inside, which is very neat, remains in perfect preservation: the book is complete. It is entered in Des. Cat., Vol. 1, p. 323, Art. 16.

23. *Tinnur-St'hala-mahatmya*. No. 106. Countermark 293.

This legend is stated to have been narrated by *Crishna* to *Arjuna*, at the latter's request. The leading topics are the penance performed by the seven great *rishis* at this place, and the appearances vouchsafed to them by *Vishnu*, under the forms of his principal incarnations. The work is written in the plainer kind of verse termed *Vachana-cavyam*. The writer's name does not appear, the document being incomplete. What remains is in good preservation.

NOTE.—It is entered in the Des. Cat., Vol. 1, p. 279, Art. 26.

24. *Rāghava-pāndaviya*. No. 41. Countermark 395.

This is a poem of difficult construction, and is represented as delivered by *Savunaca* to *Suta-rishis*. The verses are capable of a double sense. Being read in one way, a part of the contents of the *Ramayana* is given; concerning the marriage of *Sita* and the crowning of *Vibushana;* while, in another sense, a part of *Bhārata* is represented, referring to the marriage of *Draupedi* with the five *Pandavas*, and connected incidents. The Manuscript is very defective; and the name of the author does not now appear in it. It is old in the copying; but the fragment remains in tolerably good preservation.

NOTE.—It is entered in the Des. Cat., Vol. 1, p. 334, Art. 48.

Herewith the whole of the Telugu *Palm-leaf* Manuscripts have been attended to, by analysis, abstract, or indication as to need of being translated.

### *b*—MANUSCRIPT BOOKS.

1. 2.—*Manuscript Books. No.* 4. *C. M.* 305, *and No.* 5, *C. M.* 306.

A series of tales by *Somana-radyalu* who gives his parentage, and proceeds to relate a variety of notices of specially distinguished votaries of

the *Uttra-Saiva* system, which maintains the sole supremacy of *Saiva;* the virtue and efficacy of all rites, and symbols pertaining to that mode of worship; and with laudatory praises of those who had gone farthest in their proceedings against votaries of other systems. The writer seems to have been a follower of *Basavudu*, the *Vira Saiva* leader. His zeal may be estimated by the extent of his performance. The first part contains 2,000 *dwi-pada* stanzas, the 2d part 2,500, the 3d part 2,120—and these are contained in two thin quartos; being consecutive volumes; the last of which remains incomplete—the copyist apparently having proceeded no farther. There is much in these narratives borrowed from sources already noticed in these researches; but, as a whole, the document is adapted to throw strong light on the extreme *Saiva* sect; to whom, in the days of their power, such an epithet as "mild Hindus" would have been a misnomer.

No. 4 has suffered a little from the book-worm, but not to a serious degree; the other volume remains in moderately good preservation.

3. Manuscript Book. No. 7, C. M. wanting.

*Cāvyālancara-chudāmani*, a book on rhetoric.

A work in the *padya-cavyam* metre, on Telugu grammar, prosody, tropes, and poetical ornament in general: as such incapable of being abstracted.

It is not complete at the end: and though touched by worms, remains in moderately good preservation.

4. A fragment of loose papers, without covers, mark, or number.

1. Account of *Sringa-varam* near Vizagapatam. The earlier portion of this paper relates entirely to the fabulous origin of some fanes and shrines. It ascribes the first formation of the wilderness into a colony to one named *Tri-sula-bhupati*, which seems a mere title. Afterwards three classes of aborigines named, respectively, *Savaralu*, *Bhagadulu*, and *Gatamalu*, chose for themselves a king or chief, ruling the whole, whose name was *Nila-cant'ha* (also an epithet of *Siva*.) This chief's son was named *Siva Rama*, and a few names of his descendants, with very little of incident, follow. The country fell into a state of anarchy: and, at the time when the paper was written, it was under the Honorable Company's Government, paying an annual revenue-tax of ten thousand rupees.

2. Account of different tribes in the *Jaya-pur* district: these are 1, the *Miaka-rajas*. 2, the *Gailutus*. 3, the *Sagidi-vāndlu*. 4, the *Sondi-vāndlu*. 5, the *Ayara-cula* people.

The first are wild people, distinguished from the *Condu-vāndlu*. The second are rude, and given to the use of intoxicating liquor. The third are servile labourers in husbandry; not, like *Hindus*, attached to the soil, but working for cooly-hire, or daily wages. The fourth are engaged in drawing the sap of different kinds of palm-trees, the fermented juice of which they sell, and live thereby. Some of these are

*Saivas*, and some *Vaishnavas*. Of the fifth class nothing is mentioned except that they assimilate more closely to the *Saivas* among the *Hindus*. A list of towns, with details as to fields under cultivation, is appended.

4. Account of *Conda*, *Cambedu*, *Gòluconda*, and *Gudam*. The opening part of this paper has a detail of rivers, or streams, by which the country is watered and fertilized; with notice of paths, or tracks, amidst the mountains. In reference especially to the village of *Gudam*, it adverts to the before-mentioned *Nila Cant'ha*, ascribing to him the first settlement, and partial civilization. From his *Hindu*-name, it would appear, that he was a foreign colonist, who brought the wild tribes of aborigines to submit to his guidance. The whole of the above mentioned districts submitted to his rule. Details of local chiefs occur, and occasionally notice of intercommunications with the *Gaja-pati*, and *Gana-pati* princes. But the notices given are evidently only of what may, by indulgence, be termed baronial families. Beyond family successions, alliances, or discords, there is nothing of consequence.

5. Account of the *Toki* festival among the *Savaralu*, the *Conda-savaralu*, and *Malijala-savaralu*.

This festival is annually held, and forty or fifty villages unite in its celebration; choosing one village by turn for the site of operation. It is done in honor of *Jagrata-devata* the local *numen*. According to this paper they make the most important part of the preparation four or five months before the time fixed on for the festival: and that by selecting some friendless man, or woman, of the age of twenty-five, or twenty-six years; who being without relations or protectors, is seized and put into confinement, being highly fed, and allowed the free use of intoxicating beverage. At the time of sacrifice, this victim is taken out in public procession, for eight or nine successive days, proceeding round the village wherein the sacrifice is to be held. The precise act is held at four o'clock in the morning, or an hour or two before sunrise. The victim is then killed by a weapon herein termed *Ganda-godali*, and the blood is used as an offering to the aforesaid idol. Nothing is herein mentioned of eating the flesh of the victim. The person is always kept in a state of intoxication; and is usually insensible at the time of sacrifice. The people imagine that by this sacrifice they increase the fertility of their lands, and render their villages more valuable.

Remark.—The papers of this fragment are damaged; but with exception of the last they do not seem of such importance as to claim restoration. In this last section I have unexpectedly met with the account of those human sacrifices, which when lately* made public in the Goomsoor campaign created so great a sensation. The details herein given correspond substantially with those then announced; the sole fact of Cannibal-

* This abstract was first made in 1838.

ism being excepted. The record in these papers ought I think to be preserved: and in consequence of that opinion I have had this section restored.

4. Manuscript Book. No. 13, Countermark 343.

Section 1. *Aniruddha Cheritra.*

This is a mere romance. It is divided into five parts, and is composed in the *padya-cāyam* metre, by *Abhayāmatya.* The subject, in brief, is the following: a powerful king symbolically represented as having a thousand arms, and named *Abhayāmatya Banāsura*, ruled in *Svarna-giri* (golden mountain), whose daughter named *Usha* dreamt of a very beautiful person. The original being unknown to her, a servant maid named *Chitra reki* was employed to discover the person, who proved to be *Aniruddha*, grandson of *Crishna;* and who, in consequence received an invitation to pay a clandestine visit to the palace; but, being discovered there, *Banāsura* had him seized, and threatened to decapitate him. *Crishna* hearing of the perilous state of his grandson, levied an army, went and fought against *Banāsura*, and cut off his thousand arms. *Banāsura* was a great devotee of *Siva*, who came to his rescue; and the issue was a treaty of peace, with the marriage of *Aniruddha* and *Usha.* Such being the general structure, there is much ornamental filling up, in describing the persons, and perfections of the bride and bridegroom in the usual mode of Hindu poetry.

NOTE.—This paper is entered in Des. Catal., Vol. 1, p. 319, Art. 5.

SECTION 2. *Prabhulinga lila.*

This is a production containing three parts chiefly composed in the *Dvipada* metre by *Soma-deva,* and supposed to be an abridged version of a work in the *pādya-cavyam* containing five sections. *Parvati* being in *Cailasa* inquired of *Siva* if there were any other god besides himself, and he replied there was; to exemplify which statement he assumed an illusive form, and this form, was accompanied by a personification of the *Tāmasa gunam* or bad passion of *Parvati.* The personification of the bad quality of *Parvati*, became enamoured of the illusive form of *Siva;* but all attempts to reach it were unavailing; though the form was followed into wild and desert places, with much personal suffering. At length both illusive form and personification returned to *Cailasa*, and *Parvati* was ashamed of herself on seeing them. An oracular announcement declared that a personification of the *Sātvica-gunam*, or excellent disposition of *Parvati*, alone could attain to communion with the illusive form of *Siva.* The *Satvica* quality in consequence became incarnate, and proceeded to the illusive form, being *Prabhu-linga*, otherwise termed *Allama Prabhu* or *Prabhu-Svāmi*, who was entertained by *Basova*, the minister of the king of *Caliyana.* The said incarnation, on its approach, was mistaken by *Basava* for an incarnate fiend, from the terrific outward appearance. Much matter follows panegyrical of *Allama Prabhu;* and of three or four others named, as associates.

The work is an allegorical attempt at extra panegyric; and may serve to show, that the worst and most ferocious of Hindu sects, the *Jangamas* or *Vira-Saivas,* trace up every thing that is bad to forms of *Siva* and *Parvati.* *Allama-Prabhu* was preceptor to the two *Basavas;* and their proceedings are to be gathered from notices concerning them in other books of the Collection: some of which have been before mentioned.

NOTE.—This paper is entered in Des. Catal., Vol. 1, p. 285, Art. 35.

SECTION 3. *Mairavana-cheritra.*

This paper is a *Telugu* version from the Sanscrit tale. Of that an abstract has already been given: and besides rather a full abstract of the *Telugu* paper is given in the Des. Catalogue, to which it may suffice to refer. There is however an addition in this paper to the tale of the Sanscrit; consisting of matter pertaining to rites, homage, and observances relative to *Hanumàn* the hero of the tale.

NOTE.—The entry in the Catalogue is at p. 329, Art. 36, vol. 1.

GENERAL REMARK.—This Book is in good preservation. There is nothing in it of historical value, save that *Allama Prabhu* was a real person, whose biography is connected with the extermination of the *Jainas* in the N. W. provinces of the Peninsula.

5. Manuscript Book. No. 33. Countermark 323 and 333.

SECTION 1. *Matta-tiruvengala-nātha-charitra.*

This paper consists of two parts, the first is a poetical and encomiastical genealogy of a local chieftain, in the *Padya cavyam* metre; and the other a continuation of the narrative in plainer prose.

The work was written by *Vencatapati,* a Brahman, at the request, and under the patronage of *Tiruvengala-nātha,* a local chief of *Siddhavattam.* According to established usage, the genealogy is deduced downwards from the flood, through *Rama-rāja* of Vijayanagaram; and, in the narrative portion, there is a detail of border strifes with chiefs of neighbouring principalities.

The document is entered in Des. Catal., Vol. 1, p. 309, *two* copies: perhaps designating the two parts.

SECTION 2. *Dhermangada-charitra.*

Apparently a fictitious tale, intended to magnify the virtues of the *Brahmakundā-tir'tha* or sacred pool, at the shrine of *Jaganatha* in *Orissa.* It is the composition of *Narasinhà* a *Vaishnava Brahman.* *Dhermangada* a king of Cashmir, as the fruit of long penance, had in place of a son a *P'hani,* or snake, born to him, by his wife.

The king of *Saurashtra* (or *Saovirashtra*) *desam,* formed a nuptial contract with the reputed *son* of the *Cashmir* king. The daughter of the other king, though distressed at her portion, yet went on pilgrimage with her mate, and at the *Brahma-kunda* pool at *Jaganat'ha* the form of the snake was changed into the human form. Returning to Cashmir, the

marriage was again celebrated; and *Dhermangada* abdicated his throne in favor of his transformed son-in-law.

An entry occurs in the Des. Catal., Vol. 1, page 324, Art. 20.

NOTE.—In the leading feature, this seems to me a specimen of the enigmatical language. *P'hani* the hooded snake, is a synonime for *Naga;* and the people near Cashmir are termed *Nagas* in some documents (see the Mahawanso). The simple import seems to be, that a *barbarian* was invested with the privilege of caste at *Jaganatha-puram.*

Possibly the legend is one taken from the *St'hala-puranam,* as it has the resemblance of such local legends.

GENERAL REMARK.—This book is written in a large and legible hand with good ink: it is somewhat damaged, by paper-worms; but, on the whole, may at present be considered to be in moderately good preservation.

6. Manuscript Book. No. 16, C. M. 318.

*Nava Chola Cheritra*—tale of the nine *Cholas.*

A translation from the Canarese, into *dwi-pada,* Telugu composition, by *Lila Manupa-setti,* and divided into five sections. Some portions of the original Canarese appear to be in the collection. It is altogether a *Jangama* production. The original narrative is ascribed to *Panditar-adhya,* a celebrated teacher of that class. As the *Chola* princes patronized the *Saivas,* they are sectarially numbered among the *Vira Saivas;* accurate chronology being not considered of consequence. The names of the nine Cholas herein mentioned are *Cari-cala, Vicrama, Uttunga, Ahivara, Varadherma, Satyendra, Vira,* and *Uttama.* The three first, and the two last of these names often occur, both in books and inscriptions; but the other names are not usual. Stories of distinguished devotees in their respective reigns are given. The whole however seems to be apocryphal.

REMARK.—The greater part of the book is clearly written on good paper: a few pages of inferior paper have been attacked by paper-insects; but at present the whole is very legible.

7. Manuscript Book. No. 39, C. M. 729.

This thin volume contains a series of matter divided, in the table of contents, into fifty-four Sections, and relating to not less than 87 villages or *agrahārams,* in various districts of *Telingana.*

The papers are for the greater portion very carelessly, and roughly written, and offer little or nothing claiming a minute abstract. A copy of the table of contents is given in the Des. Catal., Vol. 2, p. 20, Art. 39. But that table in the book, is only another instance of deceptive displays, with very little to repay the trouble of search. As such I pass it by, without minuter notice. It remains in very good preservation. The book is on the same plan with many others labelled "Ceded Districts."

Manuscript Book. No. 61, C. M. 751.

SECTION 1. Account of *Jaganatha*, (together with notice of Orissa princes.)

It is entitled in the document an account of the kings of the *Odriya-désam*. The name of the capital town, in the earliest ages, was *Purushottama-puri* (legendary.) A fane of *Nila Mādhava-svāmi* (or Vishnu) is stated to have received homage from the *Chacraverti* sovereigns, during the *Satya*, *Trēta*, and *Dwāpara* ages. The narrative, in a lower legendary point of view, does not commence till the *Cali* age. The lunar line commencing with *Yuddhisht'hira* is given, as that of persons paying homage here. As the names, herein given, vary from other accounts I wrote them down as follows :

| | | | | | |
|---|---|---|---|---|---|
| 1. Yudhishthira,....... .. | 12 Years. | | 5. Gautama Deva,..... | 390 Years. | |
| 2. Paricshittu,.......... | 757 | ,, | 6. Mahendra Raja,...... | 315 | ,, |
| 3. Janamejaya,........... | 572 | ,, | 7. Asattu Deva,.......... | 124 | ,, |
| 4. Saumara Deva,....... | 410 | ,, | 8. Satta Saka Deva,..... | 150 | ,, |

*Satta-saka-deva-raja*, coming to *Jaganat'ha-puram*, and finding its buildings gone to decay, had these repaired, and reconstructed. His son named *Vajra-laba-deva-raja* ruled 117 years. In his time the *Turcoman-Moghuls* from *Pāda-pala* country, (the *Patans* from Affghanistan,) invaded the country with an army; but were driven back. After their retreat his son *Sara-sangi-deva-raja* ruled 115 years, in *Delhi*. He had a water reservoir excavated and conquered many princes. His son was *Hamsa-deva-raja* who ruled 122 years. In his days the Turks from Cashmir invaded the country. His son was *Bhoja-raja* who constructed bridges across various rivers, and protected many people. He fought with the *Yavanalu* who came from the *Sindha** country, and took that country. He ruled 127 years. His son *Vira Vicramaditya-raja* ruled 118 years. He had a familiar spirit termed a *Vetala* near to him. He conquered many countries. (Vicramaditya was prior to Bhoji-raja.) It is here noted that the total period of rule of the foregoing thirteen kings is 3,269 years, (average 251½ each.)

Subsequently while *Carnarjita raja* was ruling in *Delhi* in the 65th year of his reign, *Navaranga Pashah Sheikh* came with Turkish (*i. e.* Mahomedan) troops, and drove the said *Carnarjita-raja* away from Delhi. He went to *Purushottami-puri*, and dwelt there. His son was *Vatta-kesvarā-deva*, who ruled 51 years, and fought with many kings. His son was *Tribhuvana-deva-raja*, who ruled 63 years. He first established the use of cowries (or small sea shells) as currency for money. His son was *Nirmala-deva-raja*, who ruled 45 years. He fought with the Ma-

* This may have been an invasion of the Bactrians. Mr. J. Prinsep thought from some medal he made out the name Yavana-Antiochus, and inferred the reign of a Bactrian king in India. It appeared to me to be *Yavana-antaka*, "the conqueror of the *Yavanas*;" and agreeing, if so, with the Manuscript authority.

homedans. His son *Bhima-devu-raja* ruled 37 years; and his son was *Sobana-devu*, who hearing that *Rakta-bahu* (bloody-arm,) a Mahomedan chief, was coming in boats from *Delhi*, with an invading force, was, together with the whole of the people, seized with panic-fear, and fleeing from *Purushottami-puri*, with the image of their tutelary-god, they took it to *Sórna-puram* (golden town) and hid the said image there, in the ground. In that town *Sobana-devu* continued his rule. The Mahomedans came to *Jaganat'ha,* plundered and did mischief; and then returned. The son of *Sōbana* was *Chandra-devu,* who having ruled 4 years in the Jadu-caudam country, formed friendship (or alliance) with the Mahomedans; but they acted treacherously, killed him, and usurped the government, during two years. Afterwards one of the race of *Chandra-deva* ruled 48 years, and another one 96 years. The image of the sacred *Jaganat'ha* was buried under ground 146 years. Thus (from the last total) the *Hindu* kings, and the Mahomedans, ruled in all 396 years.

## *Kesari Dynasty.*

Subsequently the race termed *Kesari* arose. *Yayati Kesari* of *Jaji-puram,* was installed in the *Udriya* country. In the first year of his rule he visited *Jaganat'ha ;* and, as there was no image there, he caused the wooden image termed *Dāru* to be dug up out of the earth; and, having it set apart by *pratist'ha,* appointed the usual complement of hierophants and attendants. He ruled 52 years. His son was *Surya Késari-raja,* who ruled 23 years. The race, without connected incident, is then continued in the following series :

| | | | | | |
|---|---|---|---|---|---|
| 3. | Ananta-kesari,. . ....14 Years. | | | Cali kesari,.... .... ....22 Years. | |
| | Lalàtta, ,, ........40 | ,, | 15. | Cama ,, ...........26 | ,, |
| 5. | Kanaka ,, ... ....24 | ,, | | Kosala ,, .. ..........24 | ,, |
| | Nara ,, ........13 | ,, | | Chanda ,, .. ..........21 | ,, |
| | Padma ,, ........10 | ,, | | Prachanda ,, .... ........11 | ,, |
| | Vriddha ,, ........15 | ,, | | Druhva ,, ............10 | ,, |
| | Vatta ,, ........13 | ,, | 20. | Vijaya ,, .... ........15 | ,, |
| 10. | Gaja ,, ........12 | ,, | | Chanda-bala ,, .... ....18 | ,, |
| | Vasanta ,, ........ 2 | ,, | | Madhu-sudhana ,, ......17 | ,, |
| | Gani ,, .... ...17 | ,, | | Dherma ,, ... .... ....10 | ,, |
| | Bharata ,, ........25 | ,, | | Jaya ,, ............11 | ,, |

25 Nripa-Kesari....15 years.

He was more distinguished. He built the fort named *Barabatti* at the town of Cuttack ; and subdued many kings. The line is thus continued:

| | | | | | |
|---|---|---|---|---|---|
| | Marcadha-kesari, .....14 Years. | | | Kribá-kesari, ..........10 Years. | |
| | Tripura ,, ....10 | ,, | | Matsya ,, .. ........20 | ,, |
| | Madhava ,, ... 12 | ,, | | Bári ,, ...... ....15 | ,, |
| | Govinda ,, ... 10 | ,, | 35. | Sucaja ,, ...... ....13 | ,, |
| 30. | Nrittya ,, ....16 | ,, | | Jánujit ,, .... ..... 2 | ,, |
| | Narasingha ,, ....17 | ,, | | | |

The total period of time, occupied by thirty-six kings of the *Kesari*-dynasty, was 606 years.

Afterwards one named *Sundangi-raja* came from the South, and formed a new dynasty. He ruled 54 years.

His son was *Gangèsvara-raja* who ruled 25 years. Having no offspring his queen succeeded, and ruled 9 years. His successor was a collateral branch of the same race. *Yegabatti-Cāmadhenu-raja* succeeded, and ruled 7 years. *Mādhava-Cāmadhenu-raja* succeeded, and ruled 5 years. *Ananga-Bhima-devu* in Sal. Sac. 1103 (A. D. 1181,) made some donatives to the fane of *Jagnaat'ha*, and ruled 27 years. *Gaja-raja* ruled 5 years. *Langula-Narasingha-deva-raja* is placed in Sal. Sac. 1136: and is said to have ruled 12 years. *Cavi-Narasingha-devu-raja* ruled 25 years. *Pratāpa-Narasingha-devu-raja* ruled 20 years. *Cavi Cānda-Narasingha-devu-raja* ruled 2 years. *Cotala-Narasingha-devu-raja* ruled one year. *Sangha-bānu-Narasingha-devu-raja* ruled 7 years. From *Sundangi-raja* down to the last mentioned there were 13 rulers, who governed during 205 years.

The mention of a few other names, without any incident attached, introduces the mention of the irruption of the Mahomedans, who scoured the country, plundered, burnt, and levied tribute; after doing which they retired. Subsequently the name of *Purushottama-devu* appears with some distinction. Soon afterwards more serious struggles with the Mahomedans began. At length the Mahomedans got possession of the fane of *Jaganat'ha*, and burned the images contained therein. A *Brahman* performed the ceremony of *Pratishta* over other images, in place of those that had been so destroyed. But the document states that henceforward the country went to decay and ruin. It finally became a Mahomedan province; and then the Mahomedan officers, finding the tax on the fane of *Jaganat'ha* might be made profitable to the revenue, as a measure of political policy they brought the images into celebrity.

Remarks.—This was done by providing superb appointments, and promoting the influx of Pilgrims. By this means a shrine, not more distinguished than many others, was brought into disgraceful prominence and culpable notoriety.

This Manuscript is of some importance; and I should think might merit full translation.

It is followed by another document, in the Sanscrit language, and Telugu character; which, from a comparatively cursory examination, was found to contain the same matter as the Telugu one; so as to leave the inference that the Telugu document is a translation. In the table of contents it is marked as a second section; and stated to contain "a genealogy of the kings of *Wodradesam*" which, it may be observed, would be

a better title to the 1st Section, than that given to it, as an "account of *Jaganat'ham.*"

NOTE.—The ink is good; the country paper thin; but the whole, down to the time of its examination by me, had continued in remarkably good preservation.

Manuscript Book. No. 6, C. M. 313, 394, 337.

SECTION 1. *Jangama Calijnanam.*

This is an account put into the form of a prophecy as if delivered by *Sarvajna*, stating that *Vijāla-rayer* was to turn traitor to *Siva*, and would be killed by the *Basavas;* who, as a reward, would attain the beatification of *Siva's* world: and thenceforward proceeding, after the mention of a few unimportant events, to the history of the *Rayer* dynasty, and noticing other kingdoms, more cursorily in connexion therewith.

A supplement is added, as if delivered by *Vara-paiyar* to *Anātaiyar*, noticing some events subsequent to *Sālivāhana;* but dwelling chiefly on the incidents of the *Vijayanagara* kingdom. These things are not new, after the preceding investigations, but they are not without intrinsic interest.

SECTION 2. *Ramastava rājam.*

The commencement of a mystical work, as if related by *Suta* to *Savunaca* in the *Naimisara-vanam.* There is only the first *adhyāya*, or Section. This relates to various kinds of *Yogas*, or modes of ascetical, ritual, ceremonial, and mental reflection. It is of course imperfect.

SECTION 3. *Vāsava Canyaca-Cheritra.*

This paper, which relates to the *Cômti* class, commences with an account of the origin of the *Vaisya* caste, from the thighs of *Brahma.* The principal subject is the self-immulation of 101 families of this caste at *Pennaconda;* because *Vishnu-Verddhana*, the king of that place, sought the daughter of a merchant named *Casuma-Chetty* in marriage; and the whole tribe preferred death to compliance. A complaint was then preferred in *Siva's* paradise, that there were no longer any of the *Vaisya* caste on earth. As their souls were in *Siva's* heaven, he commanded them to go back again to earth, that the world might not remain without the *Vaisya* class; which order was accomplished. In other words the original order of *Vaisyas* having become extinct, a spurious order arose in their place.

REMARK.—This book remains in good preservation; and the contents are of average interest.

Manuscript, without cover, label, or number except the mark (× 101.)

On examination this document proved to be part of the *Naishadha*, or romance of *Nala* and *Damiyanti*, founded on an episode of the *Bhāratam.* There are eight *asvāsas* or sections, perfect, with portions of others, at

the beginning and end, imperfect. Of this tale copies are extremely common: this fragment, in consequence, is without value.

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With the exception of TELUGU statistical documents, containing replies by Natives to a series of inquiries by Colonel Mackenzie, all formed on the same plan, and labelled "Ceded Districts," the above concludes the examination of Manuscript Telugu papers in the collection, and the analysis of them made by me in 1837-39. Inclusive of the Palm-leaf Manuscripts preceding, the whole of the Telugu works, on Native Literature or Mythology, have been now reported.

A few Mahratta, and some Canarese, documents, together with the above statistical papers, remain. Abstracts are in my possession.

MADRAS,
*December* 14*th*, 1848. W. TAYLOR.

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## VIII.—*Report of the Committee of the Agri-Horticultural Society of Madras, for the year* 1848. *Communicated by* Major REID, C. B., *Secretary of the Society.*

It will be observed that although the balance sheet shows a very fair sum in favor of the Society, it is Rupees 957 less than that of the 1st January, 1848. It becomes necessary, therefore, to show what has occasioned so large an expenditure above the receipts, and what has been its result to the garden and the Society. In the first place then as to expenditure.

In 1847, the Society determined on erecting a conservatory at the lower end of the garden, at an estimate of Rupees 740-15-8. The building was erected accordingly, but its cost was not entirely brought on the books until after the completion of the balance sheet of 1st January, 1848, since which date the sum of Rupees 231-6-3 has been debited.

In June last, the large conservatory was entirely re-roofed at Rupees 95.

In September last, the Superintendent's house underwent a thorough repair and had some addition made to it in regard to comfort at Rupees 154.

In October an entire new set of gardening tools, wheel-barrows, &c. were provided, and about the same time a very complete set of instruments for pruning, lopping, budding, &c. &c., were purchased. The expense incurred for these various items stands as follows:

| | Rs. |
|---|---|
| A pair of Bullocks, - - - - - - | 50 |
| Excavating a tank, - - - - | 91 |
| Balance of new conservatory, - - - | 231 |
| Re-roofing the old do. - - - | 95 |
| New gardener's tools, - - - - - - | 88 |

| | Rs. |
|---|---|
| Box of pruning instruments with patent grindstone, | 75 |
| Repairs of Superintendent's house, - | 154 |

Making a total of Rupees 784—for expenses beyond the usual disbursements; to which must be added the sum of Rupees 294-4, paid in March for seed bill of 1847,—and which ought properly to have been paid before the balance sheet of 1st January, 1848, was made out, so that the total of extra expenses for the year is Rupees 1,078.

It will be observed that the several items of expenditure, enumerated above, are not in themselves, with the exception of the new conservatory, such as add any very apparent benefit to the garden or the Society, but have become absolutely requisite from wear and tear, and it may not be unappropriate here to remark, that the Society are much indebted to their late Secretary Captain Worster for his judicious management of their Funds, which has thus enabled them to meet with ease all these necessary periodical expenses.

Besides the above a sum of Rupees 218-12-11 has been expended in beautifying and embellishing the grounds, but as this is a work which will be continually carried on, in a greater or less degree, this expenditure can only, at present, be classed under the head of "ordinary."

There is one item more of expenditure to be noticed, and that is the sum of Rupees 214, which was paid to Mr. Charpin for plants, bulbs, &c. It is a matter of regret that this speculation has by no means answered our expectations, in the way of enriching our garden. At the time of purchase the plants were destitute of leaves, and we were obliged to trust to Mr. Charpin for their description, which has in nine cases out of ten turned out to be fictitious. In the one item of roses—though declared to be of many different varieties—the whole of them have proved to be from the same stock; so that, out of the whole of the plants purchased, we have only added about 20 new species to the garden, besides some handsome dahlias and bulbs of sorts.

RECEIPTS.

| | |
|---|---|
| On 1st January, 1848, the number of Subscribers were | 110 |
| Left India during the year, | 8 |
| Withdrawn, | 9 |
| Elected during the year, | 11 |
| Present number | 104 |

Of these, 89 may be considered as making regular payments, which, at the rate of 28 Rupees each annually, amounts to Rupees 2,492, or, on an average, Rupees 207 per month; add to this Rupees 150 monthly from Government, and we have total average of monthly

| | | |
|---|---|---|
| Gratuitous receipts | Rups. | 357 |
| Average sale of seeds, plants, &c., to non-subscribers, | ,, | 46 |
| | Total.. | 403 |

| | | Rs. | A. | P. |
|---|---|---|---|---|
| | To meet pay of Superintendent, and all servants, | 183 | 8 | 0 |
| * | Average ordinary expenses,.............. | 40 | 0 | 0 |
| | Do. extra do. .............. | 50 | 0 | 0 |
| | Total.. | 273 | 8 | 0 |

*Includes keep of 6 Bullocks, wear and tear of machinery of the draw well, cost of flower and water pots.

Leaves, in favor of the Society, a monthly average of Rupees 120. All seed bills for the current year have been paid, so that the present state of the Society stands thus on 1st January:

| | | | | |
|---|---|---|---|---|
| Cash in hand,.......................... .. .. ...... | Rups. | 745 | 4 | 0 |
| Due arrears of Subscription,...... ............ ..... | ,, | 1,266 | 0 | 0 |
| Due seed and other bills, ...... ...... ......... ... | ,, | 117 | 14 | 0 |
| Total Rupees.. | | 2,129 | 2 | 0 |

At a Meeting of the Members of the Society on the 16th June last, it was resolved to give up, for the future, the cultivation of vegetables in the garden; as the object of having done so for so many years, had been, so far as the Society was concerned, fully accomplished; in that it had taught the Natives our mode of culture, and the superiority of our vegetables, if not to their taste as esculents, certainly as a marketable commodity amongst the European and Indo-British community. As an encouragement to cultivators of European vegetables, the Society, however, still continue to award pecuniary prizes to market gardeners exhibiting the best produce at their annual meeting. One of the original intentions of the Society was the introduction into their garden, and thence the gradual distribution, of trees and shrubs, whether valuable as fruit bearing, timber, or for other qualities, or simply ornamental; and in thus giving up further cultivation for culinary purposes (which indeed required very great labor, care, and attention) the Society is enabled to turn the whole of its resources into the former channel, and thereby, it is hoped, in a short time, not only to stock its Garden with a larger and more varied assortment of fruit and other trees and shrubs, but to establish a better system of nursery gardening in all its branches, including also the collection of the seeds of all tropical plants, for distribution in India, or for transmission to Europe. The Secretary would beg here to observe, that it is very desirable this latter arrangement should be more generally known, and that Subscribers can at all times procure packets of Indian seeds carefully packed and labelled for transmission to Europe, or elsewhere—on application being made to him—with directions for the despatch; a charge only being made for packing (if in tin), or expense of carriage if paid here.

The Secretary has great pleasure in reporting that the new conservatory has proved of infinite service, during both the hot season and the rains; in the former, by means of grass tatties, the temperature was greatly reduced, and by keeping the whole of the inside constantly sprinkled and syringed with water, the injurious effects of our scorching

land-winds were less felt by our exotics, and less hardy plants, than in any other previous season. We were enabled, moreover, to propagate by cuttings in sand at a much earlier season than hitherto.

Kindly sent by
[1] Dr. White.
[2] Captain Neill.
[3] Mr. Rodrigues.
Those from Nagary by our own collector.

During the year we have received Orchids of various descriptions from Coimbatore,[1] the Nagary Jungles, Ramanmully Hills,[2] and a few from the Shervaroy Hills.[3] With very few exceptions these have all thriven well, and their preservation is mainly attributable to the shelter and moistened atmosphere of the conservatory; as although, on several previous occasions, attempts have been made in this particular line of floriculture, a total failure has invariably been the result.

In the distribution of fruit and other trees and shrubs, the last 6 months only records a list of 1,800 which have left the garden, and we have been able to propagate by seeds, layers, ghooty grafts, cuttings, &c., many thousands of young plants, now in a thriving state, for next season's supply. Among others we have at least 2,000 of young plants of the American sumach (Cæsalpinia, Coraria or Dividivi.) It is much to be regretted that greater efforts are not made to produce this drug for exportation considering its invaluable properties as a tannin. In Dr. Wallich's report on it in 1845, he says "the American sumach deserves to be extensively cultivated in this country. It seems to thrive remarkably well, requiring very little, if any care, except in its youngest state and a proportionally small expenditure of money. The tree seems to be contented with a very ordinary sort of soil, and in all probability, when once reared from seeds ripened in the country, it will be as productive as in its own native climate; or at least sufficiently productive to make the cultivation of the tree an object of importance."

Now, there is no doubt of its productiveness, and the fact of its growing so luxuriantly in the Society's garden is a decided proof of its not requiring good soil; for nothing can be worse, naturally, than that of the garden, which (except in rainy weather, when in spots not drained it becomes a quagmire) is one indurated mass of clay and sand.

The garden suffered greatly in 1846 from most destructive storms, and fully 200 fruit trees perished, among others some very valuable mangoes; many of these have been replaced by young grafts, and stocks, to the extent of upwards of 700, will be ready for grafting next year.

The demand for Mauritius Sugar Cane has almost ceased, abundance being now grown almost in every part of the Peninsula. There is still however, a small stock on hand, and which will, for the present, be kept up.

Some valuable timber trees have been introduced into the garden, such as those yielding the Chittagong wood, the Andaman red wood, and Mahogany. Of this last (Swietenia Mahogani) most valuable timber tree it is very gratifying to be able to report, that out of those raised in the garden from seed received from Calcutta in 1836, none have died, and

they are thriving so luxuriantly that some of them have attained the height of 18 feet.

The Sissoo, which was introduced some 4 or 5 years back, has now become quite common throughout the country, so much so indeed that in the Salem districts above the ghauts, it may now be occasionally met with on the road side, having commenced to take its place in those beautiful avenues, the unremitting care of which, as well as of the roads, has always done such credit to the authorities in that district.

It remains but to remark on the additional attraction of visitors to the Society's garden since the Right Honorable the Governor has kindly permitted the attendance of the band on Friday evenings, and on the kindness of those gentlemen and ladies who have contributed to defray the travelling expenses of the musicians from the Fort.

The garden is at all times open for all classes that may wish to visit it, with the single provision that they will be good enough to refrain from gathering any of its produce.

The Secretary, at the same time, laid before the Meeting specimens of a vegetable green received by him with the following letter from Monsieur Froment, of Pondicherry.

MONSIEUR,

" Après bien des recherches constantes et beaucoup de persêverance je crois avoir trouvé le moyen de fabriquer le vert végétal avec les feuilles d'une plante que l' on trouve dans l' Inde; sa manipulation, facile, plus facile, que celle de la feuille d' indigo peut me permettre d'enformer des pains en moins d' une heure, a l' aide de moyen peu coûteux, et á tres peu des frais. Si Messieurs les membres de la Societé dont vous êtes le secretaire pouvoient penser que cette decouverte merite quelqu' encouragement, je serais heureux de pouvoir être autorisé, a leur soumettre mes produits, et sur leur examen préalable du morceau que je vous envoie. J'attendrais la determination qui aura prise, ou pour m' abstenir de toutes nouvelles démarches, ou pour proposer moyennant une recompense pour la decouverte, le secret que je dois considerer comme ma propriété.

J'ai l' honneur de vous addresser par le banghy un morceau des produits que j'obtiens pour être soumis à l'examen de la Societé a la quelle vous appartenez.

J'ai l'honneur, &c. &c.
ALE. FROMENT.

Major F. A. REID, C. B.
*Secretary Agri-Horticultural Society.*

PONDICHERRY,
18*th Nov.* 1848.

Major Reid observed that he had submitted the specimen to Professor Key, who stated his opinion that this " vert vegetal" was really a vegetable substance, that he could detect none of the sources of mineral colours in it. Moreover, it burns away, leaving a light whitish ash; so that it would appear impossible that the *coloring* matter of it can be mineral.

## IX.—*Meteorological Observations made at the Madras Magnetic Observatory from January to June, 1848.*

| | Mean monthly indications of the barometer at the times of superior maximum and minimum pressure corrected to 32° 0. 1 | | | Mean monthly temperature, as deduced from the hourly observations, together with the mean monthly maximum and minimum temperature. 2 | | | Depth to which rain has fallen, and amount of water evaporated from a shallow cistern of water, together with the relative humidity of the air. 3 | | | Direction of the wind in each month, as exhibited by the number of hours during which it has blown from the N.W. S.W. S.E. or N.E. 4 | | | | Mean and extreme pressure of the wind as shown on a square foot of surface. 5 | | Mean per centage of clouds covering the face of the sky during the day and night in each month. 6 | | Mean monthly tension of vapour calculated by the monthly means of dry and wet thermometer at 30 inches barometer standard. 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. h. m. 21·41 P. M. | Min. h. m. 3·41 P. M. | Difference. | Mean. | Max. | Min. | Rain. | Evaporation. | Quantity of moisture or humidity. | N.W. | S.W. | S.E. | N.E. | Mean. | Extreme | Day. | Night | |
| | Ins. | Ins. | Ins. | ° | ° | ° | Ins. | Ins. | | No. | No. | No. | No. | lbs. | lbs. | Cents | Cents | Inches. |
| January, ........ | 30·060 | 29·944 | ·114 | 74·8 | 82·4 | 67·1 | 0 | 10·168 | ·74 | 101 | 24 | 116 | 503 | 0·11 | 0·97 | 0·19 | 0·11 | ·625 |
| February, ........ | ·047 | ·932 | ·115 | 78·1 | 86·2 | 69·2 | 0 | 10·866 | ·72 | 78 | 70 | 155 | 393 | 0·14 | 1·42 | ·18 | ·13 | ·689 |
| March, ......... | 29·948 | ·819 | ·129 | 81·9 | 90·2 | 73·0 | 0 | 11·126 | ·75 | 27 | 246 | 470 | 1 | 0·31 | 2·30 | ·22 | ·14 | ·792 |
| April, .......... | ·853 | ·733 | ·120 | 86·4 | 95·2 | 78·0 | 6·377 | 11·528 | ·75 | 39 | 224 | 430 | 27 | 0·41 | 2·85 | ·33 | ·29 | ·909 |
| May, ........ .... | ·787 | ·667 | ·120 | 88·8 | 98·7 | 80·4 | ·100 | 12·291 | ·66 | 44 | 250 | 448 | 2 | 0·54 | 2·67 | .35 | ·20 | ·869 |
| June, ........... | ·751 | ·621 | ·130 | 90·4 | 102·5 | 81·1 | 1·877 | 15·412 | ·54 | 132 | 392 | 86 | 10 | 0·48 | 2·75 | ·57 | ·63 | ·745 |

Madras Observatory,
*July 1st*, 1848.

*Meteorological Observations, made at the Madras Magnetic Observatory, from July to December, 1848.*

| | Mean monthly indications of the barometer, at the times of superior maximum and minimum pressure, corrected to 32° 0. 1 | | | Mean monthly temperature, as deduced from the hourly observations, together with the mean monthly maximum, and minimum temperature. 2 | | | Depth to which rain has fallen, & amount of water evaporated from a shallow cistern of water, together with the relative humidity of the air. 3 | | | Direction of the wind in each month, as exhibited by the number of hours during which it has blown from the N.W. S.W. S.E. or N.E. 4 | | | | Mean and extreme pressure of the wind, as shown on a square foot of surface. 5 | | Mean per centage of clouds covering the face of the sky during the day and night in each month 6 | | Mean monthly tension of vapour calculated by the monthly means of dry and wet thermometer, at 30 inches barometer standard. 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. h. m. 21·41 P. M. | Min. h m. 3.41 P. M. | Difference. | Mean. | Max. | Min. | Rain. | Evaporation. | Quantity of moisture or humidity. | N.W. | S.W. | S. E. | N.E. | Mean. | Extreme | Day. | Night | Inches. |
| | Ins. | Ins. | Ins. | ° | ° | ° | Ins. | Ins. | Cents. | No. | No. | No. | No. | lbs. | lbs. | Cents | Cents | Inches. |
| July,.......... | 29·770 | 29·660 | 0·110 | 87·3 | 97·7 | 78·8 | 3·869 | 11·235 | ·64 | 223 | 378 | 127 | 16 | 0·35 | 3·25 | ·70 | ·60 | 0·800 |
| August,.......... | ·793 | ·675 | ·118 | 86·3 | 96·2 | 78·7 | 5·126 | 10·646 | ·66 | 208 | 400 | 127 | 9 | ·30 | 1·57 | ·70 | ·75 | ·811 |
| September,....... | ·833 | ·710 | ·123 | 85·0 | 93·5 | 78·8 | 3·092 | 9·654 | ·73 | 230 | 303 | 135 | 52 | ·18 | 2·05 | ·62 | ·57 | ·854 |
| October, ......... | ·875 | ·754 | ·121 | 82·8 | 90·5 | 73·6 | 13·933 | 7·954 | ·78 | 264 | 213 | 94 | 173 | ·18 | 2·85 | ·60 | ·55 | ·850 |
| November,....... | ·978 | ·876 | ·102 | 78·8 | 84·2 | 74·7 | 17·285 | 5·333 | ·84 | 222 | 33 | 67 | 398 | ·37 | 6·70 | ·72 | ·65 | ·808 |
| December,....... | 30·024 | ·913 | ·111 | 77·3 | 83·2 | 72·0 | 3·112 | 6·318 | ·77 | 156 | 12 | 66 | 510 | ·16 | 2·05 | ·42 | ·35 | ·712 |

MADRAS OBSERVATORY,
1st *January*, 1849.

# NIGHT.

BY THE LATE REV. THOMAS HALLS, A. B.

Laté per agros, plena silentio,
Nox alta regnat; roribus humidi
Campi recumbunt, et viretum
Omne latet tenebris amictum.
Cælum nigrescens nube, reconditur,
Nec sidus unum per vacuum micat,
Lassum viatorem quod igni
Lætificet tremuloque vultu.
Singultit ægro mitis anhelitu
Nereus, et undæ pectore fluctuant,
Suoque pacatæ quiescunt
Murmure dulcisono per oras.
Sopore blando compositus jacet
Fesso colonus cum bove, totaque
Natura, finito labore
Nocte tacet placidâ sepulta ;
Ni quà latratu rus vigili canis
Obliviosum suscitet, aut moras
Undâ lapillorum loquaci
Transiliat tremebundus amnis ;
Vel inter arbusta et silüæ comas
Singultientes ludat, anhelitu
Languente suspirans amorem
Dulce tibi, Philomela, ventus.

## Translation of the above by G. W. MAHON.

'Tis night!—and, widely brooding o'er the plains,
Darkness, deep-felt, in solemn silence reigns!
The dewy fields and shadowy groves retire,
Enwrapt in gloom :—above, no starry fire
Glimmers, from forth the mirky sky, to cheer
With its faint smile the way-worn traveller.
With soothing sighs, the waving, heaving deep,
Lull'd by its own sweet murmurs, sinks to sleep.
Their labor o'er, the clown and herd are blent
In one deep dream, oblivion's blandishment!
Buried in night, all nature, hush'd, is still:
Save where the watch-dog's bark, with noisy thrill,
Startles the dreamer; or, with babbling waves,
The village brooklet tremulously laves
The opposing pebbles, and their barriers leaps;—
Or, where the sighing Zephyr, sportive, creeps,
Whispering, with panting heart, from tree to tree,
Sweet Philomel, his tale of love to thee.

## XI.—NOTICES.

### *On the Prices of Indian Grains.*

Prices of the Cerealia and other Edibles of India and England compared. By Colonel Sykes, Vice-President of the Royal Society, Read at the Meeting of the British Association on the 29th June, 1847. The author's chief object was to show that India, in cases of dearth in England, could be looked to with confidence for a supply of bread stuffs—and India having the advantage of its principal crops ripening in January and February, the moment a failure of the crop should be known in England in August, orders for supplies from the following January crops of India could be sent, and the supplies landed in England, even by the route of the Cape of Good Hope, two or three months before the ripening of the crops in England. Colonel Sykes furnished averaged prices for years from various parts of India; but he enumerates very many grains, cheap, nutritive, and in general consumption, which do not appear in the price lists, and whose names even are unknown in Europe, except to the learned. The first price list gives an average from 1827 to 1845, at seven markets in the Deccan, under the Bombay Presidency. The ultimate result is shown in the following table.

| | Avoirdupois weight of Grain for 2 *s.* | | Price per quarter English. | |
|---|---|---|---|---|
| | lbs. | oz. | *s.* | *d.* |
| Wheat, | 64 | 5 | 14 | 11 |
| Rice, | 36 | 13 | $\frac{7}{10}$ *d.* per lb. | |
| Grain, | 60 | 5 | 15 | 11 |
| Bajra, | 82 | 10 | 11 | 7 |
| Jowaree, | 100 | 8 | 9 | 6 |

Now these 100 lbs. weight of jowaree for two shillings, are sufficient for the support of a man for two months at the least. But in 1828 and 1843, at the market of Kullus, the average price of jowaree was 204 lbs. for two shillings, or more than 2lbs. for a farthing; so that in those years a man could live for less than a farthing per diem for meat. Colonel Sykes gives various other tables of prices at fifty-three military stations in Bengal, in Goojost, &c.—particularly

one from the Saugor and Nerbudda territories from 1831 to 1840, and from 1843 to 1846. In 1843 wheat sold at 167 lbs. avoirdupois for two shillings ; and at seven markets enumerated, the price per quarter English varied only from five shillings and six pence, to six shillings and eight pence. The Bengal tables, independently of the bread stuffs, gave the prices of beef, mutton, fowls, salt, sugar, &c. From these it appeared that at some places a bullock could be bought for ten shillings, a sheep for one shilling, and twenty fowls for two shillings. Salt varied exceedingly in price, from $5\frac{3}{4}$ lbs. for two shillings at Calcutta, to $49\frac{1}{7}$ lbs. at Cuttack, the averages being 20 lbs. 9 oz. for two shillings. The Government sold the monopoly salt at from $20\frac{1}{2}$ lbs. to 25lbs. for two shillings; and a curious fact was elicited from the tables, that out of the limits of Bengal proper and beyond Allahabad, the retail price of salt was lower than the *wholesale* Government price ; the wholesale price of Cuttack salt being $20\frac{1}{2}$ lbs. and the retail price out of Bengal proper $23\frac{4}{7}$ lbs. showing that there must be sources of supply independent of the Government monopoly salt. At a labourer's wages of six shillings per mensem, a third of a month's wages would supply him with a sufficiency of salt at the different stations, varying from three months in Calcutta to thirty-five months at Kheir, in the Deccan, and forty-five months in Bombay. The following table exhibits the final results.

| | Wheat. | | Rice. | | Grain. | | Flour lbs. for 2 *s.* | Peas or Dhall. | | Jowaree Bajra. | | | | Sugar per Cwt. | Salt per Cwt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lbs. for 2 *s.* | Per Quarter. | lbs. for 2 *s.* | Per Cwt. | lbs. for 2 *s.* | Per Quarter. | | lbs. for 2 *s.* | Per Quarter. | lbs. for 2 *s.* | Per Quarter. | lbs. for 2 *s.* | Per Quarter. | | |
| | | *s.* | | *s.* | | *s. d.* | | | | | | | *s. d.* | | |
| London, Nov. 16th, 1846, | 17 | 57/ | $10\frac{4}{22}$ | 22/ | 0 | 0 | 11 | 19 | 52/ | 0 | 0 | 0 | 0 | 53 to 50<br>49 to 45 | 0 |
| Do. June 1st, 1847, | 9·4 | 102/ | 9·1 | 24/6 | 0 | 0 | 0 | 0 | 68/10 | 0 | 0 | 0 | 0 | 0 | 0 |
| Do. June 18th, 1847, | $10\frac{1}{2}$ | 92/2 | 6·6 to 1·09 | 34 to 20/6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1/9 to $2/4\frac{1}{2}$ |
| Bengal, 1845 and 1846, | $57\frac{1}{2}$ | 16/8 | 25 to 45 | 5/ to 9/ | $65\frac{5}{7}$ | 14/7 | 31 | $40\frac{1}{2}$ | 23/6 | 0 | 0 | 0 | 0 | 0 | 9/ to 10/11 |
| Deccan, Averages of years. | $64\frac{1}{2}$ | 14/11 | $36\frac{3}{4}$ | $6/2\frac{1}{4}$ | $60\frac{1}{2}$ | 15/11 | 0 | 0 | 0 | $100\frac{1}{2}$ | 9/6 | $82\frac{10}{16}$ | 11/7 | 0 | 3/1 |
| Saugor, do. .... | 143 to 174 | 5/6 to $7·6\frac{3}{4}$ | 34 to 76 | 2/11 to 6/5 | 77 to $23\frac{1}{4}$ | 4/1 to 12/5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nagpoor, do. .... | $60\frac{4}{7}$ to 113 | 8/6 to 15/10 | $35\frac{1}{2}$ to 66 | 3/4 to 6/4 | $73\frac{2}{7}$ | 13/1 | 0 | 60 | 12/2 | 0 | 8/ | 0 | 12·7 | 0 | $9—1\frac{3}{4}$ |
| Goozrat, do. .... | $23\frac{1}{4}$ to 73 | 13/2 to 40/ | $28\frac{5}{7}$ to 71 | 3/2 to 7/9 | $22\frac{4}{7}$ to $51\frac{3}{7}$ | 17/7 to 42/6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hoshingabad, do. . . . | 40 to 192 | 5 to 23/10 | 35 to 68 | $3/3\frac{1}{2}$ to 6/5 | 65 to 269 | 3/7 to 14/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bombay, July, 1845.... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $2/5\frac{1}{4}$ |
| London, 1836 to 1847... | 0 | 0 | 0 | 0 | 0 | 0 | $18\frac{2}{34}$ to 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

The prices in Goozrat are those of a year of great scarcity—1846.

*Report of Brit. Association.*

## *Health of Troops in India.*

Colonel Sykes read a paper, contributed by E. Balfour, Esq., comprising his observations "On the means of maintaining the health of Troops in India." It commenced by stating, contrary to the opinion of Colonel Sykes, that no sufficient data were given in a pamphlet published by the latter to support the idea that "habits of life" or "the quantity of spirits consumed" by the army in India are the chief cause of disease. Intemperance would be found to add but a very small proportion to the deaths from climaterial diseases, which were known to continue in spite of the most regular and temperate habits. There seemed to be an unjust impression abroad that a soldier was a very intemperate character; but it would be found that other classes of our countrymen did not enjoy a greater immunity from disease. What was the proportion of deaths amongst the highly temperate civilians of India, who were the most intelligent, best clad, best paid, best lodged and most independent servants of the Indian Government? Although the mortality amongst the same class in England from 1801 to 1832, averaged only 9·1 per 1000 annually, according to the accounts of the Equitable Insurance Society, yet Mr. H. T. Prinsep informed them that in the twenty years from 1809 to 1828 inclusive, the Madras Civilians lost 23·8 per 1000, of their strength, the Bengal Civilians 25·1 per 1000, and the Bombay Civilians 31·7 per 1000. Tables were read to show that the human race enjoyed better health in their own than in any foreign country, whatever may be their rank, duties, or comforts. The paper concluded by observing that some deaths may, no doubt, be attributed to the nature and duties required by a military life, yet in most cases they are attributable to the climate of the locality in which soldiers serve.—*Ibid.*

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## *On Atmospheric Disturbances throughout the world, and on a remarkable Storm at Bombay, on the 5th of April,* 1848. *By Colonel Sykes.*

This communication, which partook more of the nature of an elaborate report than of that of a notice, characterizes the atmospheric disturbances and anomalies, which presented themselves in various places in Europe, Asia, Africa, and even America, for some months past, as not less remarkable than the political agitations and

storms which swept over Europe lately. Of these it gives ample details collected from various sources. It particularizes the ice and snow in Poonah, and the extreme cold at Bombay, Simla and other places in the East Indies, as quite a miracle. It traces the contemporaneous state of public health; and concludes by giving, as described by Dr. Buist in the *Bombay Times*, all the remarkable details of an extraordinary thunder storm; with the meteorological records preceding, accompanying, and following it, the progress of the storm from place to place, influence on magnetic phenomena, and auroral displays. Dr. Buist on the subject observes,—"Our gales of the 7th April, 27th May, 7th and 19th October, have all been traced to or from the other side of India, travelling very regularly across at the rate of 20 miles an hour. The dust storm of Sunday se'nnight noticed in our paper of Wednesday, was merely, it seems, a portion of the Madras gale of the preceding Wednesday,—the fall of the barometer which occurred here on Saturday the 4th, corresponding with that which occurred on the Coromandel coast on Wednesday the 1st,—the storm following in both cases the day subsequent to this."—*Ibid.*

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## *Minerals of Ceylon.*

The Members of the Asiatic Society of Ceylon held their usual Monthly Meeting on Monday last, at the residence of J. E. Middleton, Esq., the appointed subject for conversation being "The useful ores and earths of Ceylon."

Specimens of Iron ore of various qualities and in various states of combination, of Tin ore, Chrome, Nickel, Cobalt, and Kaolin of several degrees of purity, as well as of smelted Iron were laid upon the table, as being the chief of what were considered by Dr. Gygax as capable of being worked to advantage for commercial purposes.

A paper by the collector of these substances was then read, from which we gathered that the *Cobalt* found in Saffragam was of excellent quality, and as this mineral forms the base of a very valuable coloring matter in great request for porcelain manufactures both in Europe and in China, there appears very good reason to believe that the article might be turned to profitable account. Its value in the German markets is from £80 to £100 the ton. *Nickel* is found *abundantly* at Madampe, and elsewhere in the same district, and is also worthy of attention, as it is now in extensive use in the manu-

facture of German silver ware. The quality of the samples obtained, was stated by the Dr. to be very good.

*Tin*, although not yet found in any extensive strata, is believed most confidently to exist along the southern mountain range of Ceylon, but to explore the favourable localities would be a work involving considerable outlay and labour. The commercial value of the metal is too well known to require comment; that from Banka realizes from £80 to £90 per ton, in the European markets.

*Chrome ore* is found abundantly and of good quality as a Chromite of Iron, at Haterabage and Balangodde.

*Iron Ore.* Some excellent specimens of the Peroxide of Iron were exhibited : these are the most useful and valuable ores of the country, and is no where richer than in Saffragam. An analysis had given the following result :—

| | |
|---|---|
| Peroxide of Iron | 8,200 |
| Peroxide of Manganese | 900 |
| Molybdena | 250 |
| Silica | 550 |
| Alumina | 100 |
| | 10,000 |

These proportions will occasionally vary, but not so as to impair the actual value of the Metal. It was the opinion of several practical persons that the metal obtained from this ore was not to be surpassed in the world, and equalled only by some of the finest Swedish Iron. The very simplicity of the means by which the Singhalese smelters obtain 50 or 60 per cent. of the pure metal from the rough ore, and the ease with which it is worked into steel, bespeaks its real value. It is believed that it could be laid down in Colombo at 6*s*. or 7*s*. per cwt. of the finest quality. Attempts had been made in a small way to bring the ore down to a smelting establishment in Colombo, but obstacles had arisen from the apathy and prejudice of the native headmen, and nothing had been done. The Iron-glance, Magnetic Iron Ore, and Bog Iron Ore, were not of any real value. The latter is most abundant however.

*Kaolin.*—This substance appears to have been hitherto applied to no practical purpose save those of white-washing walls and forming water goblets of the roughest description. Some earth had been sent home and pottery made from it, which was produced. There can be little doubt from these specimens, that good use might be made of the earth in the island for tiles for houses and similar purposes.

The bad quality of the paving and roofing tiles made in the present day in Ceylon for ordinary use, is too well known to call for much comment : the inferiority also of every description of earthen vessel for domestic use is not less notorious. To effect some improvement in the manufacture need not be a very difficult task, and with the Kaolin so easily obtained, so good in texture, and to be found in such large quantities, we have a ready means of producing the finest description of tiles for the floors of houses, and the better qualities of kitchen pottery.

It was determined that information should be obtained as to the native mode of working Pottery, and if possible some experiments be made with the Kaolin.

Some specimens of native flax were exhibited, of a very superior strength and considerable firmness, concerning which it was arranged information should be sought. A member also produced a cloth on which was painted the copy of an ancient inscription to be found on a rock temple near Dambool, sent for the purpose of being deciphered by the Government Agent of the Central Province. The letters to be in Elu.—*Ceylon Examiner, Jan.* 24, 1849.

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## XII.—Proceedings of the Madras Literary Society and Auxiliary of the Royal Asiatic Society.

### *At a Meeting of the Managing Committee, held at the Club House, on Tuesday, the 5th January,* 1847.

Read the following letter from the Deputy Secretary to Government, dated 11th December, 1846.

Fort St. George, 11*th December*, 1846.
No. 1095.

Gentlemen,

Public Department.

Para. 1.—I am directed to acknowledge the receipt of your Officiating Secretary's letter of the 16th ultimo, and to convey to you the thanks of Government for the offer of the Society's Museum, which they are willing to accept, on the terms proposed. With regard to its location, arrangements will hereafter be made for depositing the Museum where it can be most advantageously placed.

2. Adverting to the 6th para. of the letter under acknowledgment, I am instructed to observe that it is apparently the desire of the Honorable the Court of Directors, that the proposed central Museum should

not be one exclusively of Economic Geology but that it should combine many subjects of interest, and it will be the object of this Government to afford every facility for rendering the Institution as extensively useful as possible.

I have the honor to be, &c. &c.

(Signed) R. G. Clarke,

*Depy. Secy. to Government.*

I. *Resolved,*—That this letter be recorded, and laid before the Subscribers at the approaching Annual General Meeting.

Read letter from the Officiating Secretary to the Madras University, dated 16th December, 1846, acknowledging receipt of letter from the Officiating Secretary Madras Literary Society and Auxiliary of the Royal Asiatic Society, dated 24th November, 1846, and forwarding, for the information of the Managing Committee, copy of a letter recently addressed to Government by the President of the Madras University, conveying the opinion of the President and Governors of that Institution, on certain points connected with the proposed establishment of a central Museum of Economic Geology at Madras.

II. *Resolved,*—That this letter be recorded.

Read the following letter from T. S. Smith, Esq., dated 29th December, 1846.

Madras, *December* 29*th*, 1846.

*To*

*The Secretary to the Literary Society.*

Sir,

I saw a few days ago at Monsieur Deschamp's on the Mount Road, a set of Books which I think would be a very desirable addition to the Stock Books of the Library; and as I am told it is for sale, and the price seems reasonable, I request you will be good enough to bring it to the notice of the Committee. The work is the "Theatre Français de Scribe" in 20 volumes, whole bound, and very well illustrated, and the price set upon it is eighty Rupees.

I have the honor to be, &c. &c.

(Signed) Thos. Sydney Smith.

III. The Committee having examined two volumes of the work in question which had been forwarded for their inspection, are of opinion that the price put upon it is much too high, and that, even if it was procurable on more reasonable terms, it would be inexpedient to purchase an expensive foreign work, until the accounts for the past year are made up, and the state of the Society's Funds ascertained.

The Officiating Secretary lays before the Meeting two letters from Messrs. W. H. Allen and Co., dated 19th October, and 19th November, 1846, submitting an explanation respecting the supposed incompleteness

of the copy of the Encyclopedia Metropolitana furnished by them to the Society, and advising the despatch of books and periodicals per steamer. The Committee observe that the misapprehension regarding the Encyclopedia Metropolitana has been already rectified, and that the books and periodicals in question have been duly received.

V. *Resolved*,—At the suggestion of the Rev. G. Knox, that a copy of the *Madras Christian Instructor*, be ordered for the use of the Society.

VI. *Resolved*,—At the suggestion of Major Anstruther, that a list be prepared of standard English works not at present contained in the Society's Library, with a view to their being obtained, either at once or by instalments, whenever the funds of the Society may appear sufficient to meet the expense without interfering with the usual supplies of new books and periodicals for the use of Subscribers. At the request of the Committee, Major Anstruther, the Rev. Mr. Knox, and Mr. Williamson undertake to prepare the list in question.

As it is understood that Mr. Jerdon has applied for an extension of his leave, and his absence from the Presidency seems likely to be protracted for an indefinite period, the Committee are of opinion that, in advertence to the 2d Resolution at their Meeting, on the 1st October, 1846, immediate steps should be taken to supply his place as permanent Secretary to the Society.

VII. *Resolved*,—Accordingly, that the situation of Secretary be considered to have become vacant from the 1st January, 1847, and that Captain Losh be requested to accept it.

Captain Losh having signified his willingness to comply with the request of the Committee, resolved further, that he be appointed Secretary accordingly, and that, in conformity with Rule IX., a copy of this Resolution be forwarded for the approval and confirmation of the President of the Society.

In accordance with the 7th Resolution at the last Meeting of the Committee, a Memorandum is laid on the Table showing a sum of 12 Rupees received during the past month from four Subscribers on account of Nos. 30 and 31 of the Journal; the balance remaining uncollected is Rupees 260-0-0.

(Signed) J. J. Losh,
*Officiating Secretary M. L. S., &c.*

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*At a Meeting of the Managing Committee, held in the Society's Rooms, at the College, on Friday the* 12*th February*, 1847.

Read letter to the address of the President of the Literary Society of Madras, from the Secretary to the Royal Society of Antiquarians of the North, dated Copenhagen, 19th November, 1845.

I. *Resolved,*—That the letter be recorded, and that the books,* and papers received with it be deposited in the Library for the use of Subscribers.

* Memoires de la societé de 1840-1843-1844, Bulletin 1843.

Read letter from B. H. Hodson, Esq., dated Darjiling in Sikim, December 31st, 1846, to the address of the Secretary of the Madras Asiatic Society, enclosing two papers on Zoology, for insertion in the Society's Journal, and requesting that the Journal may be sent to him as formerly.

The Committee observe that this letter has been opened, and replied to privately, by Mr. C. P. Brown.

II. *Resolved,*—That consideration of the communication from Mr. B. H. Hodson be postponed until the return to the Presidency of the Chairman, when the expediency of resuming the publication of the Society's Journal will come under discussion.

Read Extract from Minutes of Consultation in the Public Department, No. 1112, dated 18th December, 1846.

III. *Resolved,*—That the scientific Reports and other papers received from Government, with this Extract from Minutes of Consultation, on the 15th ultimo, be deposited in the Library, that a list of them be circulated, and that the Librarian be instructed to deliver such of them as may be required for perusal by Members of the Committee, on receipts being sent to him for them.

A general Statement of the Society's Accounts for 1846, prepared and circulated since the last monthly Meeting, is laid on the table.

IV. *Resolved,*—That this Statement be approved, and laid before the Annual General Meeting of Subscribers, to be held on the 25th instant.

A letter from Messrs. Binny and Co., dated 25th January, 1847, and their Account Current with the Society for 1846, are laid on the table.

V. *Resolved,*—That the Account Current be laid before the Annual General Meeting, and that Messrs. Binny and Co. be informed that it has been examined and found correct.

Read Memorandum from Mr. C. P. Brown recommending the purchase of certain Works* by the Society.

* The new edition of Gibbon's Rome, with a translation of Guizot's notes edited by Milman, 1845.
The Pictorial History of England, 8 volumes, royal 8vo.
The Popular Encyclopædia, in 13 volumes, 8vo.

VI. *Resolved,*—That, in the present condition of the Funds of the Society, it is not expedient to purchase expensive works of the kind in question; particularly as former editions of some of them are already in the Library.

MEMO.
Wanted Edinburgh Review, Vol. 28, or Nos. 55 and 56 of 1817.
Do. Quarterly Review, Vols. 16 and 20, or Nos. 31 and 32 of 1816, and Nos. 39 and 40 being a volume of Index for first 19 vols.
Do. New Monthly Magazine, vols. 1, 2 and 3, or the first 12 Nos. of 1821 and vols. 22, 23 and 24, or 12 Nos. for 1828.
Do. Blackwood's Magazine, vols. 1, 2, 3, 4, 7, 8, 9, 10, 13, and 14, all in Nos.

A Memorandum, showing the Volumes and numbers of standard Periodicals required to complete the bound sets of each in the Library, is laid on the table.

VII. *Resolved*,—That inquiries be made as to the least expensive mode of obtaining the Periodicals in question, and that the subject be recommended at a future Meeting.

In conformity with the 7th Resolution at the Meeting on the 8th December, 1846, a Memorandum of the sums received on account of subscriptions to Nos. 30 and 31 of the Society's Journal, since the last Meeting, is laid on the table.

*Memorandum.*

Subscriptions to the Journal Nos. 30 and 31 have been received from the following Gentlemen, since the monthly Meeting of the Committee, held on the 5th January, 1847.

| | | | | |
|---|---|---|---|---|
| Captain Green, Nos. 30 and 31, ........ .... ......... | Rupees | 4 | 0 | 0 |
| Dr. Craske, Nos. 30 and 31, .................. .... | ,, | 4 | 0 | 0 |
| J. F. Thomas, Esq., 2 Copies of No. 31, ............... | ,, | 4 | 0 | 0 |
| W. Middlemass, Esq., No. 31, ... ..... ........ | ,, | 2 | 0 | 0 |
| | Rupees.. | 14 | 0 | 0 |

VIII. *Resolved*,—That this Memorandum be recorded.

Read letter from Messrs. W. H. Allen and Co., dated 19th December, 1846, acknowledging the receipt of a remittance of £100, and advising the despatch of books by ship, and periodicals by steamer, for the Society.

IX. *Resolved*,—At the suggestion of Lieutenant Colonel Pratt, C. B., that application be made to Government for a Copy of the Aide Memoir of the Military Sciences, A, B, C, D, E, F, Edited by Officers of the Royal Engineers, it being understood that the work has been forwarded from England for distribution to certain Departments.

The Committee observe that their appointment of Captain J. J. Losh, to be Secretary to the Society, by the 7th Resolution at their Meeting on the 5th Ultimo, has been confirmed by the President as required by Rule IX.

(Signed) J. J. LOSH,
*Secretary M. L. S., &c.*

*At an Annual General Meeting of the Madras Literary Society, held in the Society's Rooms, at the College, on Thursday, the* 25*th February*, 1847.

The Secretary submitted to the Meeting, Messrs. Binny and Co.'s Account Current with the Society for 1846, showing a balance in favor of the latter, on the 1st January, 1847, of Rupees 790-11-0 and also a general account of the receipts and disbursements of the Society in 1846, and its credits and liabilities on the 1st January, 1847, showing a balance in its favor of Rupees 209-14-5.

I. *Resolved,*—That these accounts, which have been passed by the Managing Committee, and appear satisfactory, be approved accordingly.

Read letter from the Deputy Secretary to Government, in the Public Department, dated Fort St. George, 11th December, 1846, No. 1095, conveying the thanks of Government for the offer of the Society's Museum, which is accepted on the terms proposed, and stating that arrangements will hereafter be made for depositing it where it can be most advantageously placed. Observing, further, that it is apparently the desire of the Honorable the Court of Directors that the proposed Central Museum should not be one exclusively of Economic Geology but that it should combine many subjects of interest, and that it will be the object of Government to afford every facility for rendering the Institution as extensively useful as possible.

II. *Resolved,*—That the Society's Museum be accordingly made over to Government when applied for.

Read the following list of Donations of Books, &c., to the Society, since the last Annual General Meeting.

| | *Donors.* |
|---|---|
| Reports, Correspondence, and Original Papers on various professional subjects connected with the Duties of the Corps of Engineers, Madras Presidency, 2d Volume. .................... | The Officers of the Corps of Madras Engineers. |
| Memoires de la Societé des Antiquaires du Nord, 1840-1843.... ............... .... ....... | Societé Royale des Antiquaires du Nord. |
| Memoires de la Societé des Antiquaires du Nord, 1844.................................. | Ditto. |
| Antiquarise Tidsskript Udgivetafdet Kongelige Nordiske Oldskrift Selskab................ | Ditto. |
| Memoire Sur la Decouverte de L'Amerique au Dixieme Siécle,.... ........ ............. | Professor Rafu. |
| The Bhagavata Purana translated into French, 2 Vols.,. ................... ............. | Government of France through the Translator, M. Eugene Burnouf. |

III. *Resolved,*—That the above mentioned works be placed in the Library for the use of Subscribers, and included in the next Cata-

logue. It is observed that, the receipt of the work presented by the Officers of the Corps of Madras Engineers has been already acknowledged by the Managing Committee; while the receipt of the Bhagavata Purana with M. Eugene Burnouf's French translation, is stated to have been acknowledged by Mr. C. P. Brown, and the Secretary to the Royal Society of the Antiquarians of the North having requested that the receipt of his communication and donation may not be acknowledged at present, it appears sufficient to resolve, further, that the Donors are entitled to the thanks of the Society.

Read list of ten Members of the Society who have ceased to subscribe, left the Presidency, or died, and of ten who have become Subscribers since the last Annual General Meeting.

| *Ceased to be Subscribers.* | | *Became Subscribers.* | |
|---|---|---|---|
| 1. G. Harding, Esq........ | 1st Class. | 1. T. B. Roupell, Esq...... | 1st Class. |
| 2. Rev. H. Harper,....... | do. | 2. C. Sooboo Moodeliar,... | do. |
| 3. J. C. Morris, Esq...... | do. | 3. W. A. Morehead, Esq.. | do. |
| 4. J. Macleod, Esq....... | do. | 4. G. F. Fullerton, Esq.... | do. |
| 5. H. M. Rowlandson, Esq. | do. | 5. W. S. Nesbitt, Esq...... | 2d Class. |
| 6. C. T. Kaye, Esq....... | do. | 6. J. Lawder, Esq........ | do. |
| 7. Lieut. Col. C. Taylor,.... | 2d Class. | 7. Major T. T. Pears, C. B., | do. |
| 8. J. B. Key, Esq........ | do. | 8. Arthur Hall, Esq...... | do. |
| 9. Capt. M. J. Rowlandson, | do. | 9. H. R. McDonell, Esq.. | do. |
| 10. J. Lawder, Esq...... . | do. | 10. H. Nelson, Esq. ..... | do. |

IV. *Resolved*,—That these lists be recorded.

The Secretary having represented that Rule XIII., which prescribes that the Annual General Meeting shall be held in January, of every year, appears to require revision as the London Booksellers' Accounts to the end of each year are not usually received till about the middle of February, and, therefore, the Society's Accounts cannot be closed, and a statement of them prepared for submission to a General Meeting, till near the end of the latter month.

V. *Resolved*,—That a revised rule, to the following effect be substituted for the rule in question.

XIII. "That a General Meeting of the Subscribers be held annually, as soon as possible after the Society's accounts for the preceding year have been closed, and passed by the Managing Committee, and Statements of them prepared for submission to the General Meeting."

The Secretary reports that four Members of the Managing Committee are required to be nominated to supply the places of Assistant Surgeon Jerdon, W. McTaggart, Esq., the Rev. G. Knox, A. B., and T. Pycroft, Esq., the two former of whom have left, and the two latter are about to leave the Presidency.

VI. *Resolved, unanimously,*—That Lieutenant Colonel Watkins, Captain Worster, Captain Ludlow, and Dr. Middlemass, be requested to become Members of the Managing Committee.

VII. *Resolved,*—That the thanks of the Meeting be offered to the Honorable the President for his conduct in the Chair.

(Signed) J. J. Losh, *Secretary M. L. S., &c.*

(Signed) Ewd. J. Gambier, *President.*

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*At a Meeting of the Managing Committee, held in the Society's Rooms, on Thursday, the 11th March,* 1847.

Read Extract from Minutes of Consultation in the Military Department, dated 2d March, 1847, No. 1125, stating in reply to the application to Government of the Committee, made in conformity with the 10th Resolution at the Meeting held on the 10th ultimo, that the whole of the copies of the Aide Memoire of the Military Sciences received from England, have been distributed.

I. *Resolved,*—That the London Booksellers be requested to forward, for the use of the Society, the numbers of the Aide Memoire already published, and to send out regularly the future numbers as published.

Read letter from Messrs. W. H. Allen and Co., dated 19th January, 1847, forwarding a statement of their account with the Society for 1846, and advising the despatch of periodicals per steamer.

In conformity with the 7th Resolution at the Meeting on the 8th December, 1846; a Memorandum of the sums received on account of Subscriptions to Nos. 30 and 31 of the Society's Journal, since the last Meeting, is laid on the table.

*Memorandum.*

Subscriptions to the Journal Nos. 30 and 31, have been received from the following Gentlemen since the last Monthly Meeting of the Committee, held on the 12th February, 1847.

| | | | | | |
|---|---|---|---|---|---|
| J. Ouchterlony, Esq., No. 31 ............. | Rupees | 2 | 0 | 0 |
| Colonel W. Strahan,.. ,, ,, ............... | ,, | 2 | 0 | 0 |
| Sold one Copy,. ..... ,, ,, .................. | ,, | 3 | 0 | 0 |
| C. J. Bird, Esq....... ,, ,, .................. | ,, | 2 | 0 | 0 |
| | Rupees.. | 9 | 0 | 0 |

III. *Resolved,*—That this Memorandum be recorded.

(Signed) J. J. Losh, *Secretary M. L. S., &c.*

*At a Meeting of the Managing Committee, held in the Society's Rooms, on Monday, the 12th April,* 1847.

In conformity with the 2d Resolution at their Meeting held on the 12th February last, the Committee proceed, with particular reference to the communication from B. H. Hodgson, Esq., to take into consideration the expediency of resuming the publication of the Society's Journal.

I. *Resolved,*—That there appears no sufficient reason for permanently discontinuing the publication of the Society's Journal, and, accordingly, that arrangements be made for publishing the 32d Number, for which (including Mr. Hodgson's papers*) almost sufficient matter seems already available.

*Resolved, further,*—That application be made to all Members of the Society who do not subscribe to the Journal for their support to the latter, and that, as soon as a selection can be made from the scientific Reports and other papers received from Government, it be proposed to Government that the papers so selected shall be published in the Journal,† such pecuniary assistance, as may be deemed sanctioned by the orders of the Honorable the Court of Directors, either by defraying a proportion of the expenses of the Journal, or by subscribing permanently to it an adequate monthly sum, being at the same time applied for.

*Resolved, further,*—That literary and scientific contributions to the Journal be invited.

* 31st March, 1847.
† 10th April, 1847.

Read letters from J. U. Ellis, Esq.* and Captain Ludlow,† tending the resignation of their offices as Members of the Committee in consequence of being about to leave the Presidency.

II. *Resolved,*—That to fill up the vacancies occasioned by their resignation, and in accordance with Rule X., C. P. Brown, Esq., and E. B. Powell, Esq., be requested to become Members of the Committee.

* 29th March, 1847.

Read letter* from T. Boileau, Esq., stating that he has left at his house exposed for sale about 1,000 volumes of standard and most useful works to which he begs to invite the choice of the Committee; and offering, in particular, a copy of Forcellini's Latin Lexicon in 2 volumes quarto, at the price for which he obtained it as a favor, viz. Rupees 50.

III. *Resolved,*—That the Librarian be requested to obtain, if possible, a Catalogue of the books in question, showing their respective prices, in time for circulation to the Committee prior to the day fixed for their sale. It is observed that the Society's Library is already provided with a copy of the particular work mentioned by Mr. Boileau.

* These papers, having in the interim appeared in the Calcutta Journal of Natural History, were not published by the Society.

† Notices of some of these will be found in No. 32 "on the Gold Mines of Malabar," and in the present No. "on the labours of Dr. Turnbull Christie."

* 18th March, 1847.

Read letter* from Lieut. Colonel Pratt, C. B., suggesting that the Society should be in possession of the work published under the title of "Papers on subjects connected with the duties of the Corps of Royal Engineers" edited by Captain Denison, R. E., of which eight Volumes in 4to. bound in cloth at the price of £ 11-6-0 have already been published. The Librarian informed the Committee that Captain Ludlow has tendered to the Society a new and uncut copy of the above work at 15 per cent. less than the original price.

IV. *Resolved*,—That the offer of Captain Ludlow be accepted, and that he be requested to direct the forthcoming volumes of the work to be transmitted to the Society as published.

Read Extract from Minutes of Consultation in the Public Department, No. 278, dated 17th March, 1847, conveying instructions to the Civil Auditor, to continue to pass the Bill for the salaries of the three individuals attached to the Native Library in the charge of the Society, until the arrangement sanctioned by Government on the 5th January, 1847, has been carried into effect.

V. *Resolved*,—That the Chairman and Secretary, as Members of the late Sub-Committee which recommended the arrangements adverted to in this communication from Government, be requested to take the requisite steps for carrying them into effect at as early a period as practicable.

No. 1. Bituminous limestone pebble from shore of Dead Sea.
No. 2. Vesicular basalt from the Havuran E. of Jordan.
No. 3. Compact fossile basalt, extinct Volcano of Cara Devlit.—Katakekaumene, Asia Minor.
No. 4. Vein of greenchert in Trachyte of Smyrna.

The Chairman produces four mineral specimens, as per margin, received by him from Captain Newbold, for the Society's Museum.

VI. *Resolved*,—That the specimens in question be deposited in the Museum, and that the Chairman be requested to offer the thanks of the Committee to Captain Newbold.

Read letters from Messrs. Wm. H. Allen and Co., dated 29th January, and 19th February, 1847, advising the despatch of books per Ship *Tartar*, and of periodicals per Steamer, for the Society.

The Secretary reports that since the last monthly Meeting, J. U. Ellis, Esq. and D. Ross, Esq., have intimated their intention of ceasing to subscribe, and that C. St. John, Esq., and C. V. Conniah Chetty, have become Subscribers, the former in the first, and the latter in the second class; and, also, that the number of Resident Members has been considerably reduced since the commencement of the present year.

VII. *Resolved*,—That, as it is believed that many Gentlemen are prevented from joining the Society by want of sufficient knowledge of its objects, regulations, and terms of admission, a sufficient number of copies of the Rules with corrected lists of the Resident and Non-Resident Members, be printed for transmission to all eligible parties on their arrival at the Presidency.

In conformity with the 7th Resolution at the Meeting on the 8th December, 1846, a Memorandum of the sums received on account of subscriptions to Nos. 30 and 31 of the Society's Journal, since the last Meeting, is laid on the table.

*Memorandum.*

Subscriptions to the Journal Nos. 30 and 31 have been received from the following Gentlemen since the last monthly Meeting of the Committee held on the 11th March, 1847.

| | | | | |
|---|---|---|---|---|
| Capt. S. Best, No. 31,...... .... ..... ................ | Rs. | 2 | 0 | 0 |
| R. B. Bell, Esq...... ............... ....... ........... ...... | ,, | 2 | 0 | 0 |
| Capt. T. J. Newbold, Nos. 30 and 31,. ................. | ,, | 4 | 0 | 0 |
| Major F. J. Clerk, No. 31, two Copies, .......... ...... | ,, | 4 | 0 | 0 |
| | Rups.. | 12 | 0 | 0 |

VIII. *Resolved*,—That this Memorandum be recorded.

(Signed) Walter Elliot, *Chairman.* (Signed) J. J. Losh, *Secy. M. L. S., &c.*

*At a Meeting of the Managing Committee, held in the Society's Rooms, on Monday, the 7th June*, 1847.

Read letter from the Secretary to the Archæological Society of Delhie, dated Delhie, 5th May, 1847, requesting that the Madras Literary Society will follow the example of the Asiatic Society of Calcutta, and contribute a complete set of their Journal to the infant Library of the newly formed Archæological Society, which compliment will be returned as soon as the latter become able to undertake the publication of their own transactions.

I. *Resolved*,—That a set of all the procurable numbers of the Society's Journal be forwarded to the address of the Secretary to the Archæological Society of Delhie, and that he be informed that the remaining number swill be transmitted as soon as they can be obtained. Lieut. Col. Pratt, C. B., having kindly offered to take charge of the parcel for the Secretary to the Delhie Archæological Society, and to transmit it to Calcutta in the care of a Gentleman about to proceed thither, his offer is accepted with thanks.

The Secretary reports that it has been found impossible to obtain at Madras the numbers* of the Society's Journal required to complete the set supplied to the Royal Academy of Sciences of Bavaria.

* No. 2, 3, 4, 12 and 13.

II. *Resolved*,—That Messrs. Allen and Co. be called upon to forward a list of all the numbers of the Journal remaining in their charge undisposed of, and that a list of those remaining in the Library at Madras be prepared for the information of the Managing Committee. C. P. Brown, Esq. undertakes to ascertain and inform the Committee what

would be the cost of re-printing the deficient numbers of the Journal, should this be hereafter considered expedient. As soon as sufficient information on this subject is obtained, the Committee propose to take steps to furnish the Royal Society of Antiquarians of the North with a complete set of the Journal, in return for the publications of that Society, forwarded from Copenhagen, in November, 1845, and received at Madras in the latter part of last year.

III. *Resolved,*—That Robert Wight, Esq. M. D., be requested to assist the Managing Committee in obtaining a supply of objects of Natural History, especially dried plants, for transmission to the Royal Academy of Bavaria, in compliance with the request contained in their Secretary's letter, dated Munich, 10th May, 1846; and that the Secretary to the Asiatic Society of Bengal be applied to for information, respecting the Academical publications stated by the Secretary to the Royal Academy of Bavaria to have been sent for the Madras Literary Society, to the care of Henry Torrens, Esq., Vice President of the Asiatic Society of Bengal.

Read letters from Messrs. Wm. H. Allen and Co., dated 20th February, 17th March, and 19th April, 1847, advising the despatch of books per *Windsor*, and of periodicals per Steamer, for the Society.

In conformity with the 7th Resolution at the Meeting on the 8th December, 1846, a Memorandum of the sums received on account of subscriptions to Nos. 30 and 31 of the Society's Journal, since the last Meeting, is laid on the table.

*Memorandum.*

Subscriptions to the Journal Nos. 30 and 31 have been received from the following Gentlemen since the last monthly Meeting of the Committee held on the 12th April, 1847.

| | | | | |
|---|---|---|---|---|
| Lieutenant Colonel Felix, No. 31, ......... .......... | Rups. | 2 | 0 | 0 |
| Captain Lockhart, Nos. 30 and 31,............. ....... | ,, | 4 | 0 | 0 |
| The Most Noble the Marquis of Tweeddale, K. T. and C. B., No. 31............... ... ................ ....... | ,, | 2 | 0 | 0 |
| | Rups.. | 8 | 0 | 0 |

IV. *Resolved,*—That this Memorandum be recorded.

V. *Resolved,*—At the suggestion of C. P. Brown, Esq., with reference to the 8th Resolution at the last Meeting, that a Catalogue of the Society's Library be circulated to all eligible parties at the Presidency, who do not subscribe to the Library, to give them the opportunity of expressing their intention of becoming Subscribers by inserting their names in a list to be sent with a Catalogue.

VI. *Resolved,*—That as the attendance at the late Monthly Meetings has been very small, the Monthly Meetings be in future held at the Club

House, at 7 o'clock, P. M., on the 1st Tuesday in each month, as was the custom up to the close of last year.

VII. *Resolved,*—That a copy of Shelley's Poetical Works offered for sale, at the price of 7½ Rupees, by Mr. Higginbotham, be purchased for the Library.

(Signed) WALTER ELLIOT, *Chairman.* (Signed) J. J. LOSH, *Secretary M. L. S. &c.*

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*At a Meeting of the Managing Committee, held at the Club House on Tuesday, the 6th July,* 1847.

Read letter, dated Munich, 26th April, 1847, from the President and Secretary of the Royal Academy of Sciences of Bavaria, intimating, that certain works published by the Royal Academy have been transmitted for the acceptance of the Madras Literary Society; and that, upon closer inspection of the works in the Library of the Academy, various deficiencies have been discovered in the works furnished by the Literary Society.

The Committee observe that a box, containing works published by the Royal Academy of Sciences of Bavaria, has been recently received; and that measures are already in progress to obtain the works required to supply the deficiencies pointed out in the publications forwarded to the Academy.

I. *Resolved,*—That on the receipt of the expected communications from R. Wight, Esq., and the Secretary to the Asiatic Society of Bengal, in reply to the letters recently addressed to them by direction of the Committee, the receipt of this letter, and the former one on the same subject, and of the publications adverted to, be acknowledged, and the best thanks of the Society offered for the donation.

MEMO.

I called on the Manager of Vepery Press, to calculate the cost of re-printing the missing Nos. of the Madras Journal, and I handed him my own Copy for inspection. The accompanying is his reply.

The charge seems rather high, but I am not sure we could get the work done more cheaply.

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I herewith present to the Literary Society, a copy of Sterne's Tristram Shandy which, in the beginning of Vol. 3, bears the Author's signature.

(Signed) C. P. BROWN.

*10th June.*

Read Memorandum from C. P. Brown, Esq., having reference to the 2d Resolution at the last Monthly Meeting.

II. *Resolved,*—That even should it be found impossible to obtain the deficient numbers of the Journal, the present condition of the Society's Funds would not admit of Volumes 1 and 4 being re-printed at a cost of upwards of 1,250 Rupees. The consideration of the subject is therefore postponed, until the receipt of the reply of Messrs. Allen and Co., to the letter recently addressed to them, respecting the numbers of the Journal in their charge. Resolved further, that the thanks of the Society be offered to Mr. Brown, for his donation to the Library.

Read letters from Messrs. Wm. H. Allen and Co., dated 30th April, and 19th May, 1847, advising the despatch of books per *Seringapatam*, and of periodicals per Steamer, for the Society.

| | |
|---|---|
| J. Goldingham, Esq....1st Class. | |
| R. B. Bell, Esq........ | do. |
| W. U. Arbuthnot, Esq. | do. |
| D. Mackenzie, Esq..... | do. |
| Lieut. A. H. Hope,..... | do. |
| A. W. Phillips, Esq....2d Class. | |
| Captain L. Desborough, under Rule IV. | |
| Lieut. J. S. Menzies,... | do. |
| Lieut. H. J. McCrie, .. | do. |
| Lt. Col. L. W. Watson, | do. |
| Lieut. A. Campbell,.... | do. |

The Secretary reports that eleven new Members have been admitted since the last Meeting.

In conformity with the 7th Resolution at the Meeting on the 8th December, 1846, a Memorandum of the sums received on account of Subscriptions to Nos. 30 and 31 of the Society's Journal, since the last Meeting is laid on the table.

*Memorandum.*

Subscriptions to the Journal Nos. 30 and 31 have been received from the following gentleman, since the last Monthly Meeting of the Committee, held on the 7th June, 1847.

J. A. Hudleston, Esq., No. 31..,..............................Rups. 2 0 0

III. *Resolved*,—That this Memorandum be recorded.

(Signed) WALTER ELLIOT, *Chairman.* (Signed) J. J. LOSH, *Secretary M. L. S., &c.*

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*At a Meeting of the Managing Committee, held at the Club House, on Tuesday, the* 3d *August*, 1847.

Read letter, dated 2d July, 1847, to the address of the Librarian, from C. A. Roberts, Esq., inquiring if there is any objection to his having some of the stock books of the Society's Library sent to him at Cuddalore.

The Committee are of opinion that, under the present Rules, the request made by Mr. Roberts cannot be complied with. As, however, it would appear, from several remarks made in circulation on the application in question, that there is a strong feeling in favor of the extension of the advantages of the Library to Subscribers at out-stations, it may, perhaps, be found expedient to recommend to the Subscribers some modification of the existing Rules, and it is, therefore,

I. *Resolved*,—That any specific propositions on the subject, which Members of the Committee may think proper to make, be considered at a future and fuller Meeting.

Read Memorandum* from the Chairman of the Committee, forwarding for circulation a paper extracted from some of the scientific Reports received from Government

*Dated 31st July, 1847.

in the beginning of this year, containing an account of proceedings connected with the search for gold in the Province of Malabar.

As the paper was received too late to be circulated before the present Meeting.

II. *Resolved,*—That it be now circulated, as a specimen of the way in which it is proposed to employ the scientific papers placed at the disposal of the Society by Government, and that should no objection be offered to the arrangement, an offer be at once made to Government, to prepare, in the same way, for publication, such of these papers as appear to be of value and present interest. Further, that it be suggested that the Society's Journal would be the best medium for the publication of the papers in question, and others of a similar description, of which many may be probably found amongst the public records.

Read letters from Messrs. W. H. Allen and Co., dated 14th and 19th June, 1847, advising the despatch of books per *Wellesley*, and of periodicals per Steamer, for the Society.

In conformity with the 7th Resolution at the Meeting on the 8th December, 1846, a Memorandum of the sums received on account of subscriptions to Nos. 30 and 31 of the Society's Journal, since the last Meeting, is laid on the Table.

*Memorandum.*

Subscriptions to the Journal Nos. 30 and 31 have been received from the following Gentleman, since the last Monthly Meeting of the Committee, held on the 6th July, 1847.

Mr. J. H. Kenrick, No. 31,....... ........... ........ Rups. 2 0 0

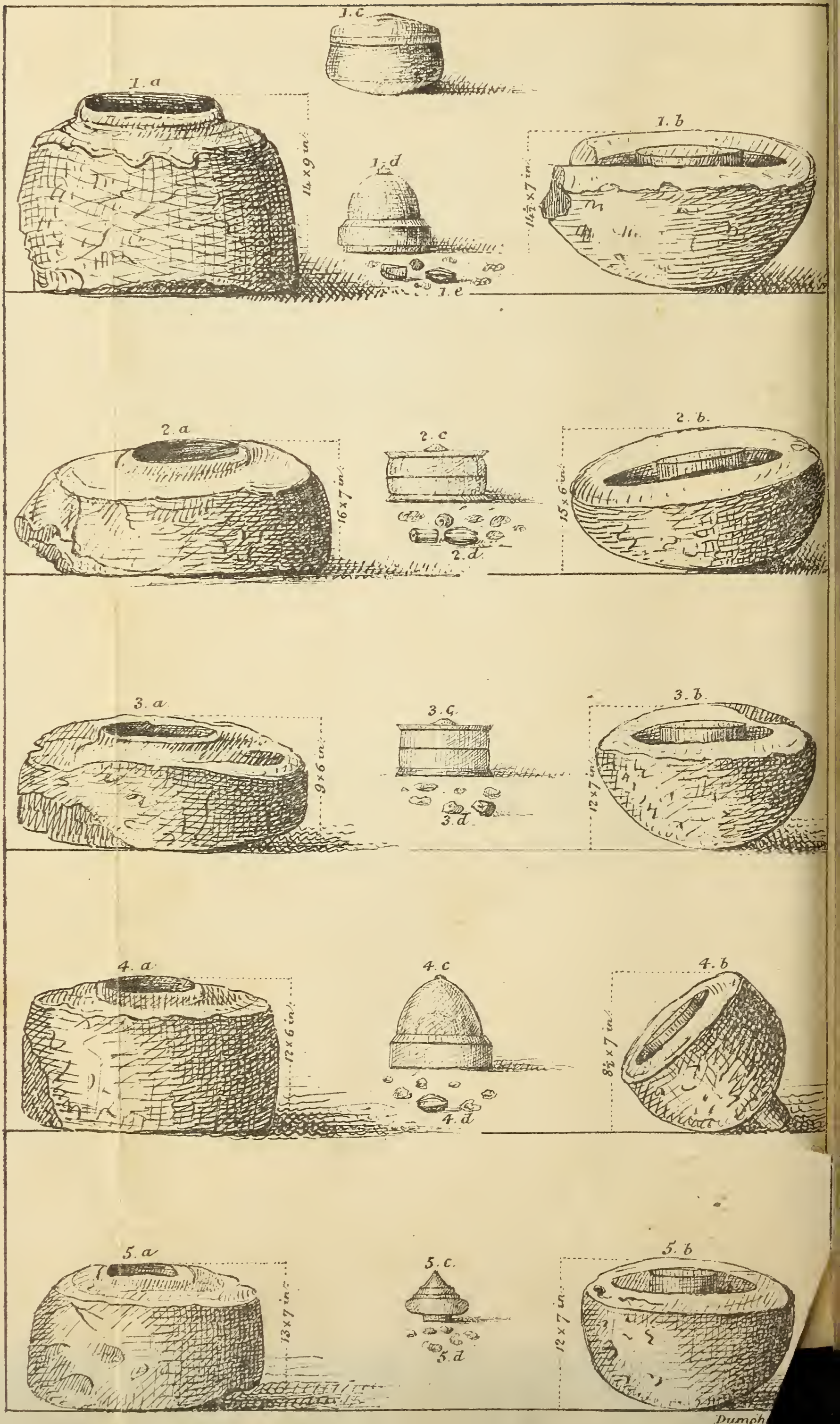
III. *Resolved,*—That this Memorandum be recorded.

(Signed) Walter Elliot, *Chairman.*

(Signed) J. J. Losh, *Secretary M. L. S., &c.*

## ERRATUM.

In margin of page 193—For Dr. White, *read* Dr. Wight.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1. a
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8½ x 7 in.
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Dumph